PROPOSAL

CONTRACT DOCUMENTS, AND CONSTRUCTION SPECIFICATIONS

for Constructing

ELECTRICAL & MECHANICAL IMPROVEMENTS
J.G. BEACHAM FILTRATION PLANT
for
THE CITY OF ATHENS, GEORGIA

Upshaw C. Bentley, Jr., Mayor

City Council

W. Calvin Bridges	George M. Hester
Robert H. Carson	Jerry F. Nicholson
Dwain P. Chambers	Lewis Shropshire, Jr.
Bryan C. Craft	John E. Taylor
Hugh R. Hale	Edward L. Turner

William T. Cook - Executive Assistant to the Mayor
H.L. Pittard - City Engineer
Denny C. Galis - City Attorney

NEWCOMB & BOYD
CONSULTING ENGINEERS
ATLANTA, GEORGIA

January, 1979

COMM. NO. 78N002

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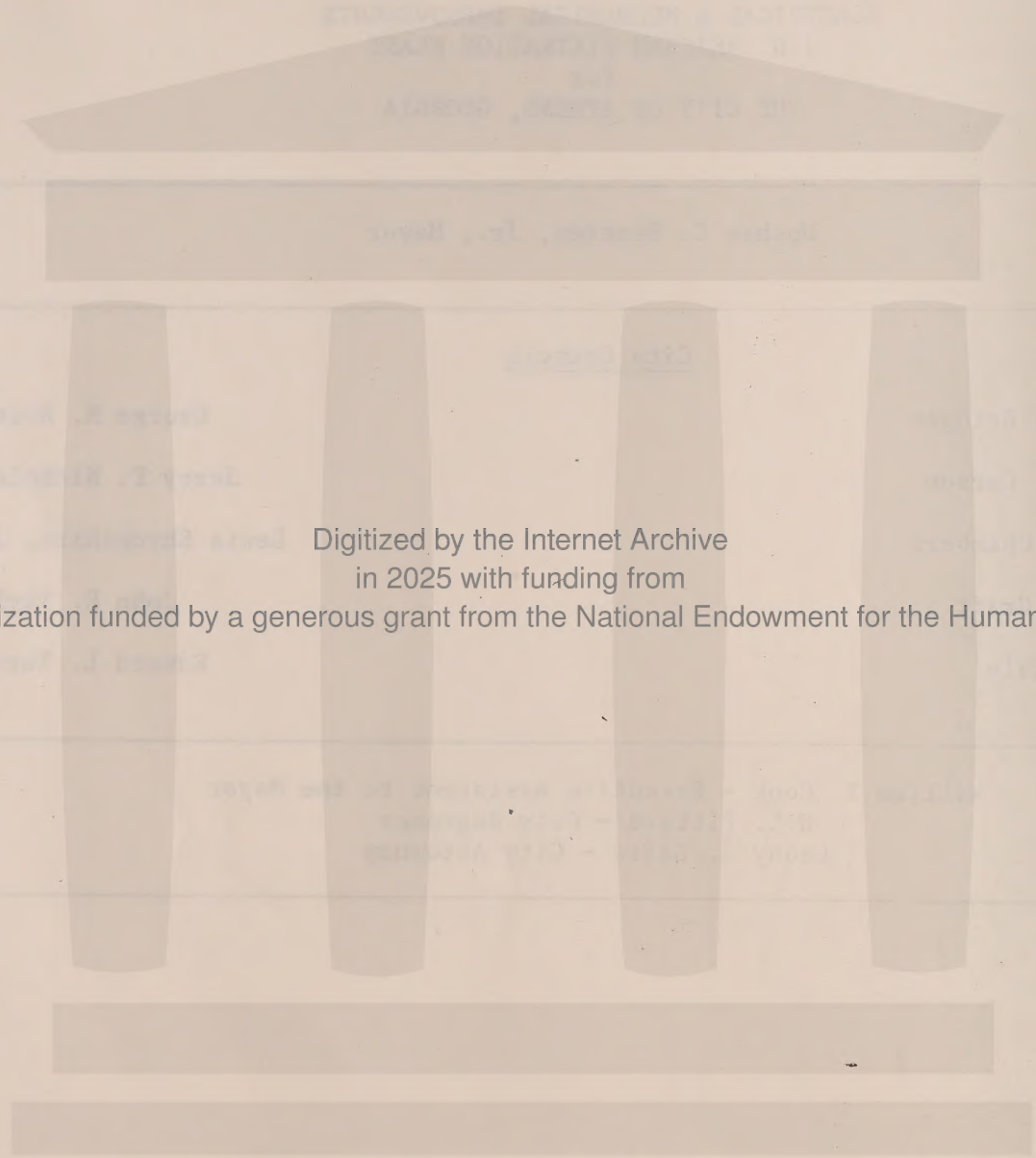

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IT IS AGREED THAT THESE PLANS AND SPECIFICATIONS, BID DOCUMENTS, PERFORMANCE BOND, PAYMENT BOND, INSURANCE CERTIFICATE, AND RELATED DRAWINGS REPRESENT THE CONTRACT BETWEEN THE MAYOR AND COUNCIL OF THE CITY OF ATHENS AND MEEHAN ELECTRIC CO., INC. FOR THE CONSTRUCTION OF THE ELECTRICAL AND MECHANICAL IMPROVEMENTS AT THE J.G. BEACHAM FILTRATION PLANT.

Maureen R. Meehan
SECRETARY

MEEHAN ELECTRIC CO., INC. (SEAL)
BY: A. Clayton Meehan Jr.
TITLE Vice President

ATTEST:
J C Fowler
CLERK

MAYOR AND COUNCIL
CITY OF ATHENS, GEORGIA (SEAL)
BY: _____
MAYOR

APPROVED AS TO FORM:
_____
CITY ATTORNEY

SEALS & SIGNATURES

RENSSELAER POLYTECHNIC INSTITUTE
LIBRARY
TROY, N.Y.

ADVERTISEMENT FOR BIDS

FOR

ELECTRICAL AND MECHANICAL IMPROVEMENTS

J. G. BEACHAM FILTRATION PLANT

CITY OF ATHENS, GEORGIA

Sealed Proposals for Electrical and Mechanical Improvements, J. G. Beacham Filtration Plant, will be received by the Mayor and Council of the City of Athens, Georgia at the City Hall until 2:00 P.M., Local Time, May 15, 1979, at which time and place they will be publicly opened and read.

Work to be Done: The work to be done generally consists of the following:

Adding a 2400V. Switchyard adjacent to Power Company substation; modifications to existing 2400 volt overhead distribution system; renovation of wiring systems in several buildings including 2400 and 600 volt motor controls.

Plans, Specifications and Contract Documents: Plans, Specifications and Contract Documents may be examined at Newcomb & Boyd, Consulting Engineers, 1700 Commerce Drive, N.W., Atlanta, Georgia, Atlanta Builders Exchange, Atlanta, Georgia, F. W. Dodge Plan Room, Atlanta, Georgia, and the City Hall, Athens, Georgia.

Plans and specifications, in complete sets only, may be obtained from Newcomb & Boyd, Consulting Engineers, 1700 Commerce Drive, N.W., Atlanta, Georgia 30318, for the following deposit:

Plans and Specifications	$20.00

Upon return of all documents in undamaged condition within thirty (30) days after the date of opening of bids, the amount of deposit will be refunded. No refunds will be made for plans and documents returned after thirty (30) days.

Bid Bond: All Proposals must be accompanied by a certified check or a bid bond of a reputable bonding company authorized to do business in the State of Georgia, in the amount equal to at least ten per cent (10%) of the Bid. Upon the proper execution of the agreement and required bonds, the check or bid bonds will be returned to all bidders.

Performance and Payment Bonds: A contract performance bond and payment bond, each in an amount equal to one hundred per cent (100%) of the agreement amount, will be required of the successful bidder.

Withdrawal of Bids: No submitted bid may be withdrawn for a period of sixty (60) days after the scheduled closing time for the receipt of bids.

Acceptance or Rejection of Bids: The right is reserved to accept or reject any or all bids and to waive informalities.

CITY OF ATHENS, GEORGIA

By: Upshaw C. Bentley, Jr.
Mayor

NEWCOMB & BOYD
CONSULTING ENGINEERS
ATLANTA, GEORGIA

January, 1979

DIVISION 1
GENERAL REQUIREMENTS
SECTION 1B
INSTRUCTION TO BIDDERS

1B.01 DEFINITIONS:

a. Bidding Documents include the Advertisement or invitation to Bid, Instructions to Bidders, the bid form, other sample bidding contract forms and the proposed Contract Documents including any Addenda issued prior to receipt of bids.

b. All definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

c. Addenda are written or graphic instruments issued by the Engineer prior to the execution of the Contract which modify or interpret the bidding documents by addition, deletions, clarifications or corrections.

d. Work or designated portion thereof for the sums stipulated therein supported by data called for by the Bidding Documents.

e. A Bidder is one who submits a Bid for a prime contract with the Owner for the Work described in the proposed Contract Documents.

f. A Sub-bidder is one who submits a bid to a Bidder for materials or labor for a portion of the Work.

g. ENGINEER or ARCHITECT, where in the Contract Documents shall refer to Newcomb & Boyd, Consulting Engineers, Atlanta, Georgia.

1B.02 BIDDER'S REPRESENTATION:

a. Each Bidder by making his bid represents that:

(1) He has read and understands the Bidding Documents and his Bid is made in accordance therewith.

(2) He has visited the site and has familiarized himself with the local conditions under which the Work is to be performed.

(3) His Bid is based upon the materials, systems and equipment described in the Bidding Documents without exceptions.

1B.03 BIDDING DOCUMENTS:

a. Copies:

(1) Bidders may obtain from the Engineer complete sets of the Bidding Documents in the number and for the deposit sum stated in the Advertisement or Invitation. The deposit will be refunded to Bidders who submit a bonafide Bid and return the Bidding Documents in good condition within 30 days after receipt of Bids. A Bidder receiving a contract award may retain the Bidding Documents and his deposit will be refunded.

(2) Complete sets of Bidding Documents shall be used in preparing bids; neither the Owner nor the Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

(3) The Owner or Engineer in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining bids on the Work and do not confer a license or grant for any other use.

b. Interpretation or Correction of Bidding Documents:

(1) Bidders shall promptly notify the Architect of any ambiguity, inconsistency or error which they may discover upon examination of the Bidding Documents or of the site and local conditions.

(2) Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Engineer to reach him at least seven days prior to the date for receipt of bids.

(3) Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections or change of the Bidding Documents made in any other manner will not be binding, and bidders shall not rely upon such interpretations, corrections and changes.

c. Substitutions:

(1) The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

(2) No substitution will be considered unless written request for approval has been submitted by the Bidder and has been received by the Architect at least ten days prior to the date for receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other

information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

(3) If the Engineer approves any proposed substitution, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

d. Addenda:

(1) Addenda will be mailed or delivered to all who are known by the Engineer to have received a complete set of Bidding Documents.

(2) Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

(3) No Addenda will be issued later than four days prior to the date for receipt of bids except an Addendum, if necessary, postponing the date for receipt of bids or withdrawing the request for bids.

(4) Each Bidder shall ascertain prior to submitting his bid that he has received all Addenda issued, and he shall acknowledge their receipt in his bid.

1B.04 BIDDING PROCEDURE:

a. Form and Style of Bids

(1) Bids shall be submitted in duplicate on the forms provided by the Engineer.

(2) All blanks on the bid form shall be filled in by typewriter or manually in ink.

(3) Where so indicated by the makeup of the bid form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the written amount shall govern.

(4) Any interlineation, alteration or erasure must be initialed by the signer of the Bid.

(5) All requested alternates shall be bid.

(6) Bidder shall make no additional stipulations on the bid form nor qualify his bid in any other manner.

(7) Each copy of Bid shall include the legal name of Bidder and a statement whether Bidder is a sole proprietor, a partnership, a corporation, or any other legal entity, and each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the State of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current Power of Attorney attached certifying agent's authority to bind Bidder.

b. Bid Security:

(1) Each Bid shall be accompanied by a bid security in the required form and amount pledging that the Bidder will enter into a contract with the Owner on the terms stated in his Bid and will, if required, furnish bonds as described hereunder in Article 8 covering the faithful performance of the Contract and the payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as penalty.

(2) If a surety bond is required it shall be written in the form of AIA Document A310, Bid Bond, and the Attorney-In-Fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of his Power of Attorney.

(3) The Owner will have the right to retain the security of Bidders until either (a) the Contract has been executed and bonds, if required, have been furnished or (b) the specified time has elapsed so that Bids may be withdrawn, or (c), all Bids have been rejected.

c. Pre-Bid Conference:

(1) A pre-bid conference will be held in the office of the Engineer approximately twelve days prior to opening of bids. Bidders will be notified of the date and time by addendum.

(2) As a prerequisite to submitting a bid, the Bidder, or his authorized representative shall attend the pre-bid conference. Bids from Bidders not represented at said conference will not be accepted.

d. Submission of Bids:

(1) All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The

envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and the portion of the project or category of work for which the Bid is submitted. If the Bid is sent by mail the sealed envelope shall be enclosed in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof.

(2) Bids shall be deposited at the designated location prior to the time and date for receipt of bids indicated in the Advertisement or Invitation to Bid, or any extension thereof made by Addendum. Bids received after the time and date for receipt of bids will be returned unopened.

(3) Bidder shall assume full responsibility for timely delivery at location designated for receipt of Bids.

(4) Oral, telephonic or telegraphic Bids are invalid and will not receive consideration.

e. Modification or Withdrawal of Bid:

(1) A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and Bidder so agrees in submitting his Bid.

(2) Prior to the time and date designated for receipt of Bids, Bids submitted early may be modified or withdrawn only by notice to the party receiving Bids at the place and prior to the time designated for receipt of Bids.

(a) Such notice shall be in writing over the signature of the Bidder or be by telegram; if by telegram, written confirmation over the signature of Bidder must have been mailed and postmarked on or before the date and time set for receipt of Bids; it shall be so worded as not to reveal the amount of the original Bid.

(3) Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids provided that they are then fully in conformance with these instructions to Bidders.

(4) Bid security, if any is required, shall be in an amount sufficient for the Bid as modified or resubmitted.

1B.05 CONSIDERATION OF BIDS:

a. Opening of Bids:

(1) Unless stated otherwise in the Advertisement or Invitation to Bid the properly identified Bids received on time will be opened publicly and will be read aloud, and an abstract of the amounts of the Base Bids and major Alternates, if any, will be made available to Bidders.

b. Rejection of Bids:

(1) The Owner shall have the right to reject any or all Bids and in particular to reject a Bid not accompanied by any required bid security or data required by the Bidding Documents or a Bid in any way incomplete or irregular.

c. Acceptance of Bid (Award):

(1) The Owner shall have the right to waive any informality or irregularity in any Bid received.

(2) It is the intent of the Owner, if he accepts any Alternates, to accept them in the order in which they are listed in the bid form, but the Owner shall have the right to accept alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates accepted.

(3) It is the intent of the Owner to award a contract to the lowest responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents, is judged to be reasonable, and does not exceed the funds available.

1B.06 QUALIFICATION OF CONTRACTORS:

a. Submission of Qualification Statement:

(1) Bidders to whom award of a contract is under consideration shall submit to the Architect upon his request a properly executed Contractor's Qualification Statement, A.I.A. Document A305, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

1B.07 POST-BID INFORMATION:

a. Submissions:

(1) Unless waived by the Engineer, the Bidder shall, within seven days of notification of selection for the award of a contract for the Work, submit the following information to the Engineer:

(a) A designation of the Work to be performed by the Bidder with his own forces.

(b) The proprietary names and the suppliers of principal items or systems of material and equipment proposed for the Work.

(c) A list of names of the Subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the work.

(2) The Bidder will be required to establish to the satisfaction of the Engineer and the Owner the reliability and responsibility of the proposed Subcontractors to furnish and perform the Work described in the Sections of the Specifications pertaining to such proposed Subcontractors' respective trades.

(3) Prior to the award of the Contract, the Engineer will notify the Bidder in writing if either the Owner or the Engineer, after due investigation, has reasonable and substantial objection to any person or organization on such list. If the Owner or Engineer has a reasonable and substantial objection to any person or organization on such list, and refuses in writing to accept such person or organization, the Bidder may, at his option, (1) withdraw his bid, or (2) submit an acceptable substitute Subcontractor with an increase in his bid price to cover the difference in cost occasioned by such substitution. The Owner may, at his discretion, accept the increased bid price or he may disqualify the Bidder. In the event of either withdrawal or disqualification under this Subparagraph, bid security will not be forfeited, notwithstanding anything to the contrary in Paragraph 1B.04d(1).

(4) Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner and the Engineer must be used on the Work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Engineer.

1B.08 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

a. Bonds:

(1) The Owner shall require the Bidder to furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder in such form and amount as the Owner may prescribe and with such sureties secured through the Bidder's usual

sources as may be agreeable to the parties. The premiums shall be paid by the Bidder.

b. Time of Delivery and Form of Bonds:

(1) The Bidder shall deliver the required bonds to the Owner not later than the date of execution of the Contract, or if the Work is commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

(2) The Bidder shall require the Attorney-In-Fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his Power of Attorney.

(3) If the Principal is a Corporation, the bond shall be signed by the President or a Vice-President, attested by the Secretary and the Corporate seal affixed. If the Principal is a Partnership, the bond shall be signed in the Partnership name by one of the partners, with indication that he is a general partner.

1B.09 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:

a. Form to be Used:

(1) Unless otherwise provided in the Bidding Documents the Agreement for the Work will be written on the Standard Form of Agreement between Owner and Contractor where the basis of payment is a Stipulated Sum, AIA Document A101.

b. If the Contractor is a Corporation, the Construction Agreement shall be signed by the President or Vice-President, attested by the Secretary, and the corporate seal affixed. If the Contractor is a Partnership, the Construction Agreement shall be signed in the Partnership name by one of the partners, with indication that he is a general partner.

1B.10 PRE-CONSTRUCTION CONFERENCE:

a. Prior to commencing work a pre-construction conference will be held at the office of the Owner, at which time the order and schedule for completion of the work will be presented by the Contractor. The items needed for the completion of the schedule are as follows:

(1) Schedule for submission and approval of Working Drawings.

(2) Firm delivery schedule for materials and equipment to be incorporated in the work.

(3) Complete schedule and sequence of the work.

(4) Progress schedule and monthly partial payments anticipated by the Contractor.

(5) Schedule of Values:

b. The Engineer will advise the Contractor of precautions required for maintenance of the water supply.

1B.11 MAINTENANCE OF WATER SUPPLY:

a. The water treatment facilities must remain in service during the progress of construction. All work involving the temporary or permanent removal of existing facilities from service shall be in accordance with a schedule approved by the Owner. The Contractor shall notify the Owner and obtain his permission in advance of beginning any such work. Under no circumstances shall the Contractor undertake any procedure which will hazard the water supply of the Owner.

b. Power Outages:

(1) Necessary power outages shall be made only as authorized by the Owner. The contractor shall request, in writing, permission from the Owner ten days prior to the desired outage. All outages shall be only of such duration as approved by the Owner.

(2) The Contractor shall provide temporary wiring to maintain continuity of electrical service to all facilities at all times, except for power outages authorized by the Owner. During power outage periods temporary power will be required for the operation of lights, controls, and instrumentation in the Control Building.

(3) Power outages will be allowed only during off-peak pumping hours. These will normally be during overtime working hours. The costs of temporary wiring and power and overtime work shall be included in the Contractor's lump-sum bid and shall be performed at no additional cost to the Owner.

c. Coordination with the Utility:

(1) The existing Georgia Power Substation will be rebuilt by the Utility Company during the construction of the switching station. The Contractor shall coordinate the construction of the switching station and the interconnection between the switching station and the substation with the Utility. Power outage, if required, shall be coordinated with the Owner.

1B.12 RESIDENT ENGINEER-INSPECTOR:

a. The Resident Engineer-Inspector shall be authorized to inspect all work done and all materials furnished, including preparation, fabrication, and furnished, including preparation, fabrication, and manufacture of the materials to be used. The Resident Engineer-Inspector shall not be authorized to alter or waive any requirements of the Specifications. He shall call the attention of the Contractor to any failure of the work or materials to conform to the Contract Documents.

b. The Resident Engineer-Inspector, with the approval of the Engineer, may reject materials or suspend the work until any questions at issue can be decided by the Engineer.

c. The presence of the Resident Engineer-Inspector shall in no way lessen the responsibility of the Contractor.

1B.13 OFFICE FOR RESIDENT ENGINEER INSPECTOR:

a. The Contractor shall provide a temporary office at the site of the work for the use of the resident engineer inspector. The office shall be weather-tight and shall be provided with heat, air conditioning, electric lights, and adequate windows. The Contractor shall also provide plan table, chair, legal-size fiber transfer file with fifty (50) manila folders for the permanent records, and use of such business machines as may be necessary for the resident engineer inspector's duties.

b. All utilities will be provided by the Owner.

1B.14 SANITARY REGULATIONS:

a. Necessary sanitary conveniences for the use of the workmen on the work shall be erected and maintained by the Contractor in such manner and at such points as shall be approved by the Engineer. Their use shall be strictly enforced.

1B.15 SHANTIES:

a. Should the Contractor so desire, he may build shanties or other structures for housing tools, machinery and supplies, but they will be permitted only at approved places, and their surroundings shall be maintained at all times in a sanitary and satisfactory manner. On or before completion of the work, all such structures shall be removed, together with all rubbish and trash, at the expense of the Contractor.

P R O P O S A L

TO THE MAYOR AND COUNCIL

CITY OF ATHENS, GEORGIA

Submitted: 5-15-79,

1979

The Bidder declares that he has examined the site of the work an informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the Specifications for the work and contractural documents relative thereto, and has read all Special Provisions and General Conditions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees, if this Proposal is accepted, to contract with the Mayor and Council of the City of Athens, Georgia in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary, and to complete the construction of the work in full and complete accordance with the shown, noted, described, and reasonably intended requirements of the Specifications and Contract Documents to the full and entire satisfaction of the Mayor and Council of the City of Athens, Georgia with a definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents, for the sum of Three Hundred Ninety-Eight Thousand Five Hundred Thirty-Five dollars ($398,535.00).

ALTERNATE BID

The Owner reserves the right to make certain changes in the work as follows:

ALTERNATE NO. 1. Delete all site work in the switching station area except excavation for structure and equipment foundations, fencing, and rock fill and weed control in the switching station yard. The site will be prepared by Owner and be ready for Contractor's use within 90 days after award of Contract.

DEDUCT $ 12,000.00

For the Owner's accounting purposes, the above base bid lump sum is composed of the following: (Amounts should include total cost to Owner)

Switchyard addition $ 149,200.00

Renovation of overhead line to Sandy Creek pumping station	$ 15,780 00
Other outside distribution work	$ 17,500 00
Modification of existing high service pump controllers	$ 27,645 00
New high service pump control assemblies	$ 28,750 00
Alterations to old raw water pumping station	$ 17,840 00
Alterations to new raw water pumping station	$ 17,920 00
Miscellaneous interior electrical work	$ 123,900 00

Bidder acknowledges receipt of Addendum (a) No.(s) 1-2-3.

The Bidder further proposes and agrees hereby to commence work under his Contract, with adequate force and equipment, on a date to be specified in a written order of the Engineer, and to fully complete all work thereunder within Three Hundred Fifty (350) consecutive calendar days from and including said date.

The Bidder further agrees that, in case of failure on his part to execute the Construction Agreement and the Bonds within ten (10) consecutive calendar days after written notice being given of the award of the Contract, the check or bid bond accompanying this Bid, and the monies payable thereon, shall be paid into the funds of the City of Athens, Georgia as liquidated damages for such failure, otherwise the check or bid bond accompanying this Proposal shall be returned to the undersigned.

Attached hereto is a certified check on the _____

_____ Bank of _____,

or a bid bond by the United States Fidelity & Guaranty Co.,

in the amount of 10 percent

_____ Dollars ($_____)

made payable to the City of Athens, Georgia, in accordance with the conditions of the Advertisement for Bids and the provisions herein.

Submitted: MEEHAN ELECTRIC CO. INC.

Bidder's License No. 402 By: R. Clayton Meehan (L.S.)

Title: Vice President

NOTE: If the Bidder is a corporation, the Proposal shall be signed by an officer of the corporation; if a partnership, it shall be signed by a partner. If signed by others, authority for signature shall be attached.

Address: P. O. Box 409, 197 Park Avenue, Athens, Georgia

Telephone No. 548-7253

The full names and residences of persons and firms interested in the foregoing Bid, as principals, are as follows:

L. C. Meehan, Sr. 170 McLeroy Drive, Athens, Georgia

L. Clayton Meehan, Jr. 440 Forest Road, Athens, Georgia

The Bidder shall here state what work he has done of similar nature to that bid for, and give references that will afford the Owner opportunity to judge as to experience, skill, business standing and financial ability.

Middle Oconee Water Pollution Control Plant

Cedar Creek Water Pollution Control Plant

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ _____, as Principal, and _____ _____, as Surety, are hereby held and firmly bound unto the Mayor and Council of the City of Athens hereinafter known as the "Owner", in the penal sum of _____ _____ Dollars ($_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed, this _____day of _____, 19___.

The Condition of the above obligation is such that whereas the Principal has submitted to the Mayor and Council of the City of Athens, a certain Bid attached hereto and made a part hereof to enter into a contract in writing, for the complete work of _____ _____, for the amount of _____ _____ Dollars ($_____).

NOW, THEREFORE:

(a) If said Bid shall be rejected, or in the alternate,

(b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (Properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulated and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

INWITNESS WHEREOF, the Principal and the Surety have hereunto met their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their property officers, the day and year first set forth above.

_____ (L.S.)
Principal

_____
Surety

By: _____

IMPORTANT - Surety companies executing bonds must appear on the Treasury Department's most current list Circular 570 as amended) and be authorized to transact business in th state where the project is located.

*(NOTE: If the Principal is a Corporation, the bond shall be signed by the President or a Vice-President, attested by the Secretary and the Corporate seal affixed. If the Principal is a Partnership, the bond shall be signed in the Partnership name by one of the partners, with indication that he is a general partner.)

SECTION 1D
AIA GENERAL CONDITIONS

1D.01 This constitutes notice that the "General Conditions of the Contract for Construction", AIA Document No. A201, Thirteenth Edition, 1976, Articles 1 to 14, inclusive, are incorporated into and made a part of the contract by reference, and shall apply to the General Contractor and all Sub-contractors and shall remain in effect, unless amended, voided or superseded by the Supplementary General Conditions. The said documents with amendments thereto as set forth herein shall govern in the event of conflict with any other provisions, conditions or terms of the plans and specifications.

These documents are available for study at the office of the Engineer and the City Hall, Athens, Georgia.

SECTION 1E
SUPPLEMENTARY GENERAL CONDITIONS

1E.01 THE GENERAL CONDITIONS OF THE CONTRACT:

A. The "General Conditions of the Contract for Construction", AIA Document No. A201, Thirteenth Edition, 1976, Articles 1 to 14, inclusive, hereinafter referred to as the "AIA General Conditions", and the paragraphs of this section form the General Conditions of the Contract and shall apply to the General Contractor and all Subcontractors. Where any article, paragraph, or sub-paragraph of the AIA General Conditions is supplemented by one of the following paragraphs, the provisions of such article, paragraph, or sub-paragraph shall remain in effect, and the supplementary provisions shall be considered as added thereto. Where any article, paragraph or sub-paragraph in the AIA General Conditions is amended, voided, or superseded by one of the following paragraphs, the provisions of such article, paragraph or sub-paragraph not so amended, voided or superseded shall remain in effect.

1E.02 DEFINITIONS"

A. Paragraph 1.1.1 of the AIA General Conditions is amended by the deletion of the last sentence: "The Contract Documents _ _ _ _ _ _ Agreement."

1E.03 INFORMATION AND SERVICES REQUIRED OF THE OWNER"

A. Paragraph 3.2.5 of the AIA General Conditions is deleted and the following substituted in lieu thereof: "Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, 10 copies of Drawings and Specifications for the execution of the work. Additional copies will be provided at Architect's cost of reproduction."

1E.04 WARRANTY:

A. Paragraph 4.5 of the AIA General Conditions is amended by the addition of the following:

"4.5.2 The warranty period for all materials and work furnished under this Contract shall be one year from certification by Architect of final completion of the work."

1E.05 PROGRESS SCHEDULE:

A. Paragraph 4.10.1 of the AIA General Conditions is deleted and the following substituted in lieu thereof:

4.10.1 The Contractor, within fourteen days after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information an estimated progress schedule for the Work. The schedule shall be in bar-graph

form and shall indicate the percent of completion and the estimated dollar value of the Contractor's draw for the period. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

1E.06 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

A. Paragraph 4.12 of the AIA General Conditions is amended by the addition of the following:

"4.12.9 Shop Drawings and product data shall be submitted in 7 copies for approval by Architect."

1E.07 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND:

A. Paragraph 7.5.1 of the AIA General Conditions is deleted and the following sbstituted in lieu thereof:

"7.5.1 The Contractor shall furnish both a Performance Bond and a Payment Bond, each in an amount of 100% of the Contract Sum. The surety must be one which is authorized to do business in the State of Georgia and is listed on "Department of the Treasury Circular 570", current edition, as acceptable surety on Federal bonds, and the surety must, in addition, be acceptable to the Owner. The prescribed form of the Performance Bond and Payment Bond shall be in accordance with the specimen forms included as a part of this Section 1E.

The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his power of attorney indicating the monetary limit of such power.

It shall be specifically understood that the terms of the guarantee as specified in Paragraph 13.2.2 and guarantees called for elsewhere in the specifications, the compliance therewith, and the fulfillment of all obligations thereunder, shall be fully protected and enforced by the Performance Bond furnished by the Contractor.

Bonds shall be delivered in triplicate to the Architect not later than the date of execution of the Agreement Between Owner and Contractor."

1E.08 SCHEDULE OF VALUES:

A. Paragraph 9.2.1 of the AIA General Conditions is deleted and the following substituted in lieu thereof:

"9.2.1 Refer to Specification Section 1F, SCHEDULE OF VALUES, for provisions on this subject. Reference to Section

9.2 elsewhere in the Contract Documents shall read as referring to that section of the specifications."

1E.09 APPLICATIONS FOR PAYMENT:

A. Paragraph 9.3.1 of the AIA General Conditions is amended by deleting the word "ten" and inserting "fifteen" in lieu thereof.

1E.10 PROGRESS PAYMENTS:

A. Paragraph 9.5.1 of the AIA General Conditions is deleted and the following substituted in lieu thereof:

"9.5.1 The Owner will pay the Contractor between the fifteenth (15th) and twentieth (20th) of each month for work performed the preceding month in accordance with plans and specifications plus any approved change orders. Payments to be made as follows: The Contractor will prepare an Application for Payment each month of all work performed the preceding month with all acceptable materials suitably stored on the site at the time. When the Application for Payment is approved by the Architect, the Owner will pay ninety percent (90%) of the amount due.

1E.11 INSURANCE:

A. Paragraphs 11.2 and 11.3 of the AIA General Conditions is deleted and the following substituted in lieu thereof:

"1. Hazards - The General Contractor shall be responsible from the time of his signing the Owner-Contractor Agreement or from the time of the beginning of the first work, whichever shall be earlier, for all injury or damage of any kind resulting from the work to persons or property, regardless of who may be the Owner of the property. In addition to the liability imposed upon the Contractor on account of bodily injury (including death) or property damage suffered through the Contractor's negligence, which liability is not impaired or otherise affected hereby, the Contractor assumes the obligation to save the Owner harmless and to indemnify and defend the Owner from every claim arising out of or through injury (including death) to any person or persons or damage to property (regardless of who may be the Owner of the property) arising out of or suffered through any act or omission of the Contractor or any subcontractor, or anyone either (1) directly or indirectly employed by, or (2) under the supervision of any of them in the prosecution of the work included in this contract.

Acceptability of Insurance Companies - No insurance will be acceptable unless written by a company licensed by the State Insurance Commissioner to do business in

the state in which the work is performed at the time the policy is issued and the company must, in addition, be acceptable to the Owner.

a. Workmen's Compensation Insurance for the Contractor and each Subcontractor.

1) The Contractor agrees to comply with the provisions of the Workmen's Compensation laws of the state in which this work is performed and to require all subcontractors likewise to comply. Workmen's Compensation Policy shall, in addition, include Employer's Liability coverages in the limits of liability of $100,000.00 - one Accident and Aggregate Disease. The Contractor agrees that, prior to the beginning of any work by the Contractor or any subcontractor, as the case may be, he (the Contractor) will furnish to the Owner for himself and for each subcontractor, a certificate, executed by an insurance company, showing issuance of Workmen's Compensation coverage for the state in which the work is performed.

2) Certificates of Insurance shall be addressed to the Owner and shall be identified for the particular project that it is submitted.

3) There shall be attached to and made a part of the Workmen's Compensation Insurance Policy, a cancellation endorsement of the insurance company in accordance with the specimen endorsement included as a part of this Section 1E.

4) Disposition: Certificate for Contractor and each subcontractor must be deposited with the Architect and approved prior to commencement of work. Submit two copies to Architect for approval and distribution.

b. Other Insurance - For the Contractor

The Contractor shall obtain and maintain at his expense insurances with minimum limits as shown below and shall protect the Contractor and Owner from any claims for property damage or bodily injury, including death, which may arise out of operations under this contract. The Contractor shall furnish the Owner certificates, policies, and cancellation endorsements as shown below:

1) Owner's Protective Liability Insurance - taken out in the name of the Owner as insured.

a) Bodily Injury ... $300,000 each occurence

... $300,000 Aggregate

b) Property damage .. $300,000 each occurence

.. $300,000 Aggregate

Cancellation Endorsement - shall be in accordance with the specimen endorsement included as a part of this Section 1E.

Disposition: Original policy must be deposited with Architect and aproved prior to commencement of work. Submit original policy and one (1) copy to Architect for approval and distribution.

2) Contractor's Comprehensive General Liability Insurance - taken out in the name of the Contractor with the following limits:

a) General Liability ... $500,000 each occurence - Premises and Operations

... $500,000 each occurence - Independent Contractors

... $500,000 completed operations and products

1. Bodily Injury ... $500,000 each occurrence - Contractual

... $500,000 completed operations and products

2. Personal Injury... $300,000 each person Aggregate

... $300,000 General Aggregate

3. Property Damage .. $300,000 each occurrence - Premises and Operations

... $300,000 each occurrence - Independent Contractors

... $300,000 each occurrence - completed operations and products

... $300,000 each occurrence - Contractual

... $300,000 Aggregate

... $300,000 Operations, Independent Contractors, Products and Contractual

b) General Liability Policy shall include the following:

1. Property Damage Liability Insurance includes coverage for XC and U hazards.

2. Occurrence Basis Coverage is provided under Property Damage Liability.

3. Broad Form Property Damage Coverage is provided for this project.

4. Personal Injury Liability Insurance includes coverage for personal injury sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the insured.

5. Coverage provided for Contractual Liability (including indemnification provision) is assumed by insured.

6. Completed Operations Liability will be kept in force for two years after the date of final acceptance.

Certificate of Insurance - shall be addressed to the Owner, executed by the insurance company.

Cancellation Endorsement - shall be in accordance with the specimen endorsement included as a part of this Section 1E. Refer to Paragraph 1E-11, Page 1E-8.

Disposition: Certificate of Insurance must be deposited with the Architect and approved prior to commencement of work. Submit two copies to Architect for approval and distribution.

3) Contractor's Comprehensive Automobile Liability Insurance - taken out in the name of the Contractor with the following limits:

a) Bodily Injury ... $1,000,000 each person
... $1,000,000 each occurrence

b) Property Damage ... $500,000 each occurrence

c) Automobile Liability Policy will include the following:

1. Coverage will apply to owned, non-owned and hired automobiles.

2. Occurrence Basis Coverage is provided under Property Damage Liability.

Certificate of Insurance - shall be addressed to the Owner, executed by the insurance company.

Cancellation Endorsement - shall be in accordance with the specimen endorsement included as a part of this Section 1E.

Disposition: Certificate of Insurance must be deposited with the Architect and approved prior to commencement of work. Submit two copies to Architect for approval and distribution.

1E.12 SPECIMEN

ENDORSEMENT FOR WORKMEN'S COMPENSATION INSURANCE POLICIES FOR CONTRACTOR AND SUBCONTRACTOR, OWNER'S PROTECTIVE LIABILITY INSURANCE POLICY, CONTRACTOR'S COMPREHENSIVE GENERAL LIABILITY INSURANCE POLICY AND CONTRACTOR'S COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE POLICY.

Attached and forming part of Policy No. _____
(Number of Policy)
of the _____ Insurance Company,
(Name of Insurance Company)
issued at its _____, _____
(City) (State)
Agency, Date of endorsement _____

For _____
(Name of Project)

In consideration of the premium for which the policy is written and proper rate adjustment when applicable, the insurance company agrees as follows:

> The insurance company agrees that this policy shall not be cancelled, changed, allowed to lapse, or allowed to expire until ten days after the Owner has received written notice thereof as evidenced by return receipt of registered letter or until such time as other valid and effective insurance coverage acceptable in every respect to the Owner and providing protection equal to protection called for in the policy shown below shall have been received, accepted, and acknowledged by the Owner.

The foregoing insurance provisions have been incorporated into by reference and are hereby made a part of insurance

policy No. _____, this _____

day of _____, 19 _____

_____
(Name of Company)

_____
(Signature of Authorized Representative)

PERFORMANCE BOND

CLARKE COUNTY)
) ss:
STATE OF GEORGIA)

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____, hereinafter known as

the "Contractor," as principal, and _____

_____, as surety, are held and firmly
bound unto The Mayor and Council of the City of Athens, Georgia, hereinafter known as the "Owner," in the

penal sum of _____

_____Dollars ($_____)

lawful money of the United States of America, to be paid to the Owner, for the use and benefit of said obligee, and of all persons doing work or furnishing skill, tools, machinery, or materials under or for the purposes of the contract hereinafter named, for which payment, well and truly to be made, we bind ourselves, our successors, and our several respective heirs, assigns, executors, and administrators, jointly and severally, firmly by these presents.

SEALED WITH OUR SEALS AND DATED THIS THE _____ DAY OF _____, 19____.

WHEREAS, the above bounden _____

_____, by an instrument in writing,

bearing even date, with these presents, has contracted with the Owner to furnish all equipment, tools, materials, skill and labor _____

_____

_____

_____

All work to be performed in strict accordance with the attached Agreement or Contract and Specifications, which Contract is by reference made a part hereof:

NOW, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said _____

_____

shall complete the work provided for in said Contract according to terms, and shall save the obligee hereunder free from all costs and charges that may accrue on account of the doing of the work specified in the Contract, and shall comply with the laws appertaining to said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

1E

AND THE FURTHER CONDITION OF THIS OBLIGATION IS SUCH THAT IF _____

_____, as Contractor, shall fully

and faithfully perform the work in accordance with the terms of the annexed contract therefor and the plans and specifications therein referred to, and provide the materials therein called for, and replace defective work or materials for a period of one year after the completion of this contract, then this obligation shall be null and void; otherwise they, _____

_____, as Contractor and

_____, as Surety, jointly

and severally agree to pay the Owner the difference between the sum to which the said _____, as Contractor, would

be entitled in the completion of the Contract, and that which the Owner may be obliged to pay for the completion of the work by Contract or otherwise, and agree to pay any damage, direct or indirect or consequential, which said Owner may sustain on account of such work or on account of the failure of said Contractor properly and in all things to keep and execute the provisions of the Contract.

And the said _____

as Contractor, and _____

as Surety, hereby further bind themselves, their successors, assigns, heirs, executors, and administrators, jointly and severally, that they will indemnify and save harmless and will pay all amounts, damages, costs, and judgments which may be recovered against, and all expenses incurred by, the Owner and all representatives of said Owner from or arising out of all or any suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work, or any such suit or claim arising from any other act, omission, negligence, or misconduct of the Contractor, his agents, representatives, servants, and employees in the performance of said work or of the repair or maintenance thereof, or the manner of doing the same, or the neglect of said Contractor, or agents or servants, or the improper performance of the said work by the Contractor or agents or servants, or the infringement of any patent rights by reason of the use of any equipment or materials furnished under the said Contract, and will also pay any damages for delay in performance within the time agreed, as stated in the Contract; furtner, failure so to do with such persons, firms, partnerships, or corporation shall give them a direct right of action against the principal and surety under this obligation.

As the said surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying the same, shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

Without limiting the effect of any other provisions herein contained, this Bond is to be construed as a statutory bond under the provisions of Section 23-1705 of the 1933 Code of Georgia as amended to date.

IN WITNESS WHEREOF, the said _____

has caused _____ corporate seal to be hereto affixed, and these presents to be signed in its name by _____

and the said _____

as Surety, has caused _____ corporate seal to be hereto affixed and these presents to be signed in its name by _____.

(As to Contractor)

Signed, sealed and delivered in the presence of:

_____

_____

*CONTRACTOR (SEAL)

_____

By: _____
(Name) (Title)

ATTEST:

_____
Secretary

(As to Surety)

Signed, sealed and delivered in the presence of:

_____

_____

SURETY (SEAL)

_____

By: _____
Attorney in Fact

COUNTERSIGNED:

By: _____
Resident Agent
(Resident of Clarke County)

APPROVED AS TO FORM:

_____
City Attorney

*NOTE: If the Principal is a corporation, the bond shall be signed by the President or Vice President, attested by the Secretary and the corporate seal affixed. If the Principal is a partnership, the bond shall be signed in the partnership name by one of the partners, with indication that he is a general partner.

Bond Approved _____

PAYMENT BOND

CLARKE COUNTY)
) ss:
STATE OF GEORGIA)

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____, hereinafter known as the "Contractor," as principal, and _____

_____, as Surety, are held and firmly bound unto The Mayor and Council of the City of Athens, Georgia, hereinafter known as the "Owner," in the penal sum of _____ Dollars ($_____) lawful money of the United States of America to be paid to the Owner, for the use and benefit of the said obligee, and all persons doing work or furnishing skill, tools, machinery, or materials under or for the purpose of the contract hereinafter named, for which payment, well and truly to be made, we bind ourselves, our successors, and our several respective heirs, assigns, executors, and administrators, jointly and severally, firmly by these presents.

SEALED WITH OUR SEALS AND DATED THIS THE _____

DAY OF _____, 19____.

WHEREAS, the above bounden _____

_____ by an instrument in writing, bearing even date, with these presents, has contracted with the Owner to furnish all equipment, tools, materials, skill, and labor _____

_____

_____

_____.

All work to be performed in strict accordance with the attached Agreement or Contract and Specifications, which Contract is by reference made a part hereof:

NOW, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said _____

_____

and all subcontractors to whom any portion of the work provided for in the

attached Agreement or Contract is sublet and all assignees of the said ____

---

and of such subcontractors shall promptly make payments to all persons supplying him or them with labor, material, or supplies for or in the prosecution of the work provided for in such contract, or in any amendment or extension of or addition to said Contract, and for the payment of reasonable attorneys fees, incurred by the claimant or claimants in suits on said bond, then the above obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, however, that this bond is subject to the following conditions and limitations:

(a) Any person, firm or corporation that has furnished labor, materials, or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right of action against the Contractor and Surety on this bond, which right of action shall be asserted in a proceeding, instituted in the county in which the work provided for in said Contract is to be performed or in any county in which said Contractor or Surety does business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants for his or their use and benefit against said Contractor and Surety or either of them (but not later than one year after the final settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

(b) The Principal and Surety hereby designate and appoint the City Clerk of Athens, Georgia as the agent of each of them to receive and accept service of process or other pleading issued or filed in any proceeding instituted on this bond and hereby consent that such service shall be the same as personal service on the Contractor and/or Surety.

(c) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one year after the final settlement of said Contract.

(d) This bond is given pursuant to the terms of Section 23-1705 of the 1933 Code of Georgia as amended as all the provisions of law with reference to this character of bond as set forth in said section or as may hereinafter be enacted are hereby made a part hereof to the same extent as if set out herein in full.

IN WITNESS WHEREOF, the said _____

has caused _____ corporate seal to be hereto affixed and these presents to be signed in its name by _____.

_____ (SEAL)

(As to Contractor) *CONTRACTOR

Signed, sealed and delivered in the presence of:

By: _____
(Name) (Title)

_____

_____

(As to Surety) ATTEST:

Signed and delivered in the presence of:

_____
Secretary

_____ SURETY:

_____ _____

APPROVED AS TO FORM:

_____
City Attorney

*NOTE: If the Principal is a corporation, the bond shall be signed by the President or a Vice-President, attested by the Secretary and the corporate seal affixed. If the Principal is a partnership, the bond shall be signed in the partnership name by one of the partners, with indication that he is a general partner.

Bond Approved _____

SECTION 1F

SCHEDULE OF VALUES

1F.01 SCHEDULE OF VALVES:

A. The Contractor shall submit to the Engineer a schedule of values allocated to the various portions of the work. This schedule shall be used only as a basis for the Contractor's Applications for Payment.

1F.02 CONTENTS:

A. The schedule shall provide the following information:

1. Item number; description of item; dollar value; percent complete; and amount earned to date.

2. Summary of materials stored.

3. Amount of original contract, percent complete, and amount earned to date.

4. Smmary of Change Orders, dollar value, percent complete, and amount earned to date.

5. Value of materials stored.

6. Total amount earned, amount of retention, total amount earned less retention, previous applications, and amount now due.

7. Contractor certificate of payment.

8. Certificate of the Resident Engineer Inspector.

1F.03 SUMMARY OF MATERIALS STORED:

A. The summary of materials stored shall indicate the following information.

1. Schedule of values item number associated with the item stored.

2. Name of contractor or subcontractor storing materials.

3. Type of material, quantity, and dollar amount.

4. Certification by preparer that summary is a true and accurate statement.

1F.04 CONTRACTORS CERTIFICATE OF PAYMENT:

A. The following certification shall be submitted with each Application for Payment.

1. I certify that all claims outstanding against the undersigned Contractor for labor, materials, and expendable equipment employed in the performance of said contract have been paid in full in accordance with the requirements of said contract, except such outstanding claims as are listed below or on the attached sheet, which statement contains all claims against the Contractor which are not yet paid, including all disputed claims and any claims to which the Contractor has or will assert any defense.

I further certify that all of the materials indicated on the Application for Payment as being stored on the site, but not yet incorporated into the building, have been purchased, delivered, and are now stored on the site for future incorporation into the building, and until so incorporated the title to same is, upon payment of this statement, vested in the Owner. Furthermore, the undersigned Contractor assumes full responsibility for the existence, protection, and, if necessary, replacement of the above-mentioned materials until the completion of this contract.

Contractor _____ By _____

Date _____ Title _____

1F.05 RESIDENT ENGINEER INSPECTOR'S CERTIFICATE:

A. The following certification shall be submitted by the Contractor with each Application of Payment.

1. CERTIFICATE OF THE RESIDENT INSPECTOR

I certify that I have verified this Application for Payment and that to the best of my knowledge and belief it is a true and correct statement of work performed and materials supplied by the Contractor and that the Contractor's certified statement of his account and the amount due him is correct and just and that all work and materials in this Application for Payment have been performed in full accordance with the terms and conditions of the contract documents and authorized changes thereto.

Name _____ Resident Engineer Inspector. Date _____

DIVISION 2
SITE WORK
SECTION 2A
CLEARING AND EARTHWORK

2A.01 DESCRIPTION:

a. The work covered by this Section of the Specificatons consists of clearing of site, grading, and filling.

2A.02 CLEARING:

a. Areas to be graded shall be cleared of all natural and artificial obstructions. Materials and equipment located in the area will be removed by the Owner. Top soil, vegetation and wood of any nature shall be removed from the areas to be paved and from the area of the switching station enclosure. Stumps and roots in fill areas shall be removed to a depth of 18 inches below existing grades. Stumps and roots in cut areas shall be removed to a depth of 18 inches below finish grade.

b. Depressions caused by the removal of stumps or roots shall be filled and compacted to the requirements of "Class 1 Fill" under paving or structures and "Class 2 Fill in all other areas.

c. Trees which interfere with the construction of the switching station or overhead electrical conductors shall be trimmed. Trees in the construction area shall be boxed and protected from damage.

d. Cleared and grubbed debris shall be removed from the Project site.

2A.03 TOP SOIL:

a. Top soil shall be removed from the areas to be graded and stock piled on the site. Following the completion of the paving, and structures erected under the contract, the top soil shall be distributed, outside of the fenced area, to a depth of 4 inches to develop the finish grades. Excess shall be removed from the site.

2A.04 EXCAVATION:

a. Excavation within the graded areas shall be performed to the levels and grades shown on the drawings or as specified. All excavated material shall be transported to and placed in the type fill area for which they are suitable. Excess and unsuitable excavation materials shall be removed from the site. Excavations carried below levels shown shall be backfilled with concrete of the class specified for footings. Excavated material suitable for backfill shall be piled away

from trenches or other banks to avoid overloading and to prevent slides or cave-ins.

2A.05 FILL:

a. All compacted fills shall be formed of laboratory approved materials placed in horizontal layers as specified hereinafter. Each layer shall be spread and rolled with either tamping equipment or power rollers until compacted to the density required by the fill classification specified. Fill classifications shall be one or more of the following, as hereafter specified.

1. Class I Fill shall be made of material capable of being compacted to 100% and remaining stable after being compacted. This class fill shall be spread and compacted in 6" layers to a density of at least 100%. The fill material shall have a dry density at optimum moisture of at least 100 lbs. per cu. ft. when compacted in accordance wth A.S.T.M. D-698-58T, unless wiaved by the soils laboratory.

2. Class 2 Fill shall be the same as Class I except it shall be compacted to a density of 95%.

b. All fill under the switching station foundations, control house, and equipment foundations and pads shall be Class 1. All other fill, unless otherwise indicated, shall be Class 2.

c. The Contractor shall furnish any additional fill required to bring the grade to elevations indicated or to produce the class of fill specified.

2A.06 LABORATORY SERVICES:

a. The Contractor shall employ an independent testing laboratory, acceptable to the Engineer, to check the suitability of the fill material, to determine if the required density is obtained, and to test compacton of the exposed sub-grades.

b. Certified test reports shall be submitted to the Engineer.

c. The cost of all laboratory tests shall be paid by the Contractor.

2A.07 COMPACTION TESTS:

a. Laboratory test shall be made of the material to be compacted, using the standard Proctor Compaction Test (A.S.T.M. D-698-58T) to determine the maximum dry density of optimum moisture content. Field density determinations shall be compared with the maximum dry density obtained by the Standard Proctor Test. The dry densities obtained by field test, to be

acceptable, shall be at least that per cent of the Standard Proctor maximum dry density required for the class of fill.

2A.08 FIELD DENSITY DETERMINATIONS:

a. Field density tests shall be made to determine the compaction of the fill. Tests will be made at depths of from 6" to 1' below the surface of each 2' lift as follows:

1. Class 1 Fills require 1 test for each 2000 square feet of fill area for each 2' lift.

2. Class 2 Fills require 1 test for each 2500 square feet of fill area for each 2' lift.

2A.09 UNSATISFACTORY MATERIAL:

a. If the existing soil at the required excavation level or underlying controlled fill is ruled unsatisfactory by the Soils Laboratory, the material shall be removed and replaced to produce the specified class fill. Such work will constitute changes in the work and shall be handled as described in the General Requirements.

2A.10 GRADING:

a. The Contractor shall shape the graded area to obtain the lines indicated on the drawings. Elevations, contours and grade lines shown on the drawings indicate the existing grades and finish grades required under this contract. Grades not otherwise indicated shall be brought to uniform levels or slopes between points where elevations are given, or between such points and existing finished grades.

2A.11 ROCK EXCAVATIONS:

a. No additional payment will be made for excavation of rock. The bidder shall satisfy himself as to rock or other material which may be encountered and make allowances for all contingencies in his lump sum bid. The bidder must rely on his own information and is invited to make his own borings and to form his own opinion of the sub-surface conditions.

b. The Owner shall be given a 24 hour notice by the bidder before sub-surface investigations are made.

2A.12 BLASTING:

a. Blasting will be permitted only if rock cannot be removed by conventional methods. If blasting is found to be necessary, the Engineer shall be advised before any explosive is brought on the job and he shall prescribe such precautionary measures as he deems necessary.

b. All blasting for rock excavation shall be done under the supervision of a Blasting Engineer retained and employed by the Owner. It will be his duty to advise the blaster of hole spacing and loading and to make seismic and concussion measurements where deemed necessary. The Contractor shall cooperate with the Blasting Engineer by uncovering and exposing pipe and structures for instrument mounting. He shall also advise the Resident Engineer when each shot is ready so that measurements may be taken if needed.

c. Blasting operations shall be conducted in strict accordance with all existing ordinances and regulations and shall be done only with the Blasting Engineer's approval and under his supervision.

d. All exposed structures shall be carefully protected from the effects of the blasts and all blasts shall be covered with blasting mats, dirt, heavy timbers or other suitable material. The blasting shall be done by experienced workmen. Any damage done shall be promptly repaired by the Contractor at his own expense. All blasting supplies shall be stored in a manner approved by the State Fire Marshal, and a watchman shall be stationed at all times at the place of storage.

e. All shots shall be delayed so as to minimize ground vibrations with a maximum peak particle velocity, as measured at the nearest structure (pipes, etc.) not to exceed 2.0 inches per second. The overprssure (noise or concussion) shall be minimized and sufficient stemming and matting used to prevent overpressure in excess of 120 db. Precautions shall be taken to minimize flying rock and sufficient matting used to prevent rocks from striking any person or structure.

f. Vibration recording instruments shall be used on the initial shots, and all others deemed necessary to determine proper blasting procedures. These instruments shall be of the type which records on direct-reading tape the three (3) components of velocity. The analysis of these recordings are to be signed by a Registereed Professional Engineer in Georgia. Blasting is not to be conducted which will produce a Scaled-Distance less than previously recorded for at least three (3) different shots deemed to be safe. The Scaled-Distance is to be determined by the distance from the shot to the nearest structure subject to potential damage from ground vibrations.

g. Overpressure (concussion) is to be recorded on direct-recording tape, preferably on the same recording as the vibration. The instrument used for measuring concussion shall be the type specifically designed for impact-type overpressure from blasting.

h. The blaster is to maintain an accurate log of each shot, listing as a minimum the following: date, time, station

number, manufacturer and type of explosive, method of firing, total weight of explosive, number of delays, number of holes, hole depth, maximum weight of explosive per delay, amount of stemming, type and amount of matting.

DIVISION 2
SITE WORK
SECTION 2B
EROSION CONTROL, PAVING, FENCING

2B.01 EROSION CONTROL:

a. All portions of the graded areas not covered with crushed stone or concrete shall be covered with well-rooted cuttings of English Ivy sprigged not further than ten inches apart. The ivy cuttings shall be watered until the roots are established, after which clean pine straw shall be spread over the sprigged areas in quantity of one bale per 300 square feet of area.

2B.02 PAVING:

a. The new access road and service area shall have an 8 inch compacted graded aggregate base course, bituminous tack coat, and one and one-half inch plant mix surface course. Materials and construction methods shall conform to the "Standard Specifications for Highway Construction" of the Georgia Department of Transportation, dated April 20, 1972, as amended to date, as follows:

Section 300: Specifications Applying to All Base and Subbase Courses.

Section 310: Graded Aggregate Construction

Section 413: Bituminous Tack Coat.

Section 400: Hot Mixed Asphalt Construction.

b. The switching station yard shall be covered with 6 inches of crushed stone, No. 78, Ga. D.O.T. specifications.

2B.03 WEED CONTROL:

a. After the crushed stone in the switching station yard has been graded to specified level, apply a dry chemical herbicide at a rate of 1 pound per 100 square feet to that area covered by crushed stone and within the fence. Care shall be exercised in the application of the herbicide to prevent killing vegetation outside of the fenced area.

2B.04 FENCING:

a. Provide a new 6 foot high chain-link fence around the switching station as indicated.

b. The fence shall consist of 2" mesh by 9 gauge galvanized-after-weaving fabric, 3 strands galvanized barbed wire, galvanized pressed steel post caps, galvanized top rail, posts, and gate.

c. All post shall be galvanized and shall be not less than the following: Line posts - 2-1/2" O.D. (3.652 lbs. per ft.), end and corner posts - 3" O.D. (5.79 lbs. per ft.), gate posts - 4" O.D. (9.109 lbs. per ft.), top rail - 1-5/8" O.D. (2.272 lbs. per ft.). Terminal, corner, and gate post shall have extra-strut and tie bracing.

d. Gate frames shall be 2" O.D. (2.717 lbs. per ft.) galvanized pipe with welded corner. Gates shall have heavy duty latches, keepers, gate stop, and heavy duty hardened bronze padlock with duplicate master keys.

e. Posts shall be set a full 3 foot deep in concrete footings placed the full size of holes as excavated. Posts shall be grounded as indicated. Spacing between posts shall not exceed 10 feet.

DIVISION 3
CONCRETE
SECTION 3A
CAST-IN-PLACE-CONCRETE

3A.01 DESCRIPTION:

a. Furnish and install all reinforced and unreinforced concrete as indicated and as specified.

3A.02 APPLICABLE SPECIFICATIONS:

a. The American Concrete Institute Standard ACI 318-63, and all codes and standards cited therein except Chapter 1, Chapter 2, Section 504, Section 603, and as otherwise specified in this section.

3A.03 MATERIAL STANDARDS:

a. Portland cement shall conform to ASTM C150-74, Type I. Only one brand of cement shall be used for the exposed concrete.

b. Aggregates shall conform to ASTM C33-74a.

c. Water shall be clean and free from injurious to concrete amounts of oil, acid, alkali, organic material, salts, or other deleterious materials.

d. Air-entraining admixture shall conform to ASTM C260-74.

e. Ready-mixed concrete shall conform to ASTM C94-74a.

f. Reinforcing Steel bars shall be Grade 40 deformed bars conforming to ASTM A615-75. All reinforcing steel shall be Billet Steel Bars.

g. Metal accessories as required to properly secure the reinforcing in position shall be provided in accordance with ACI 315-65 and as specified in this section.

3A.04 CONCRETE:

a. Concrete shall be composed of cement, fly ash (if required), admixtures (if required), fine aggregate, coarse aggregate, and water proportioned and mixed to produce a plastic workable mix in accord with the requirements of this Section, and shall be suitable for the specific conditions of placement. Concrete shall be classfied as "A", "B", and "C"; shall have normal setting characteristics (unless the use of high early strength cement is approved by the Engineer); shall be used in the locations identified below; and shall have 28-day compressive strengths not less than those listed below, except that concrete containing high early strength cement shall have 7-day compressive strengths not less than those listed below.

1. Class "A" concrete shall have a compressive strength of not less than 3,000 psi, and shall be used for reinforced concrete work, and for unreinforced footings and slabs not thicker than 8-inches.

2. Class "B" concrete shall have a compressive strength of not less than 2,200 psi, and shall be used for gravity type walls, and for unreinforced footings and slabs thicker than 8-inches.

3. Class "C" concrete shall have a compressive strength of not less than 1,500 psi, and shall be used for concrete subfoundations, pipe envelopes, and concrete backfill where required.

3A.05 MATERIALS:

a. Admixture shall be added to Class "A" and Class "B" concrete. The admixture shall be Master Builders' "Pozzolith", or approved equivalent, and shall be added in accord with the admixture manufacturer's printed instructions. A standard dispenser shall be used to introduce the admixture into the mix.

b. Fine aggregate shall be natural sand consisting of hard, strong, durable, and uncoated particles having fineness modulus of not less than 2.30 nor more than 3.00; variation in fineness modulus shall be limited to +0.20 from the average of all tests. Aggregate shall have gradation as follows:

Sieve Size	Per Cent Passing, by Weight
No. 4 Sieve	95 to 100
No. 16 Sieve	50 to 85
No. 50 Sieve	10 to 30
No. 100 Sieve	2 to 10

c. Coarse aggregate shall be washed gravel or crushed stone consisting of hard, strong, durable, and uncoated particles; and shall contain neither vegetable matter nor soft, friable, thin, and elongated particles in quantities considered deleterious by the Engineer. Coarse aggregate shall have gradation as follows:

Sieve Size	Per Cent Passing, by Weight
1-1/2" Sieve	100
1" Sieve	95 to 85
1/2" Sieve	55 to 30
No. 4 Sieve	5 to 0
No. 16 Sieve	1 to 0

d. Cement shall satisfy the requirements of ASTM C150-74; cement for normal Class "A", "B", and "C" concrete shall be Type I. Cement for high early strength Class "A", "B", and "C" concrete shall be Type III. Type III cement shall be used only if its use is approved by the Engineer.

e. Fly ash, if used, shall satisfy the requirements of ASTM C618-73, except that the loss-on-ignition shall be not more than 6%.

f. Forms shall be of plywood or of tongue-and-groove lumber, and shall be of grade and type suitable to obtain the finish required. Forms constructed of tongue-and-groove lumber shall be lined when used for exposed surfaces. Form lining, where used, shall be of tempered fiber board of not less than 1/8 inch thickness.

3A.06 READY-MIXED CONCRETE:

a. The use of ready-mixed concrete is required and shall conform to ASTM C94-74. The quality of materials shall be as specified. The maximum period from the time when water is added and mixing starts until the concrete is delivered into the form shall in no case exceed 1 hour; the Contractor shall watch the various batches so that whenever concrete shows signs of segregation or partial setting, it shall not be put into the forms.

3A.07 CERTIFICATE OF COMPLIANCE:

a. The supplier of the concrete shall certify that the concrete supplied by him was prepared in accordance with this Section of the Specifcations and that the concrete will develop the 28-day compressive strength specified.

b. The Contractor shall supply three copies of the supplier's certification to the Engineer.

3A.08 SLUMP TESTS:

a. Slump tests of concrete shall be made in the field by the Contractor for each pour with an accurately made sheet iron test cone, and in accord with the procedure described in ASTM C143-74. The slump of concrete shall be not less than 3-1/2 inches, nor more than 5-1/2 inches.

3A.09 CONCRETE CYLINDERS:

a. Concrete cylinders for testing purposes shall be made in accordance with the procedure described in ASTM C31-69. Two cylinders shall be made from samples taken during major pours. The cylinders shall be properly stored at the job site.

3A.10 PLACING OF CONCRETE:

a. Concrete shall be compacted and shall be worked into all the recesses. Concrete shall be placed in its final position as soon as possible after mixing and must be in place within 1 hour after water has been added to the dry materials.

b. Concrete shall be deposited in its final position, and at such a rate that the concrete is at all times plastic and flows readily between the bars. No concrete that has partially hardened or been contaminated by foreign matter shall be deposited in the work, nor shall retempered concrete be used. Concrete shall be deposited with care, so as not to splash forms or reinforcing steel.

c. Immediately after placing, the concrete shall be compacted by mechanical internal vibrating equipment supplemented by hand-spacing, rodding, and tamping as required to produce a dense concrete free of voids, air pockets and honeycombs. Duration of vibration shall be limited to the time necessary to produce satisfactory consoldation without causing objectionable segregation. The vibrator shall not be inserted into the lower courses that have begun to set. Vibrators shall be applied at uniformly spaced points not farther apart than the visible effectiveness of the machine.

d. Placing will not be permitted when the sun, heat, wind or other conditions prevent proper finishing and curing of the concrete. Concrete shall not be placed at temperatures below 40°F or at 40°F and falling.

3A.11 FINISHING:

a. When concrete has set sufficiently to permit, forms and form ties shall be carefully removed. Depressions resulting from removal of form ties, and other holes and rough places, shall be thoroughly wetted with water and pointed with non-staining, non-shrink sand-cement mortar.

b. After pointed surfaces have sufficiently set, exposed surfaces shall be kept wet with water, and shall be rubbed with a carborundum stone of medium fineness, or other equally as good abrasive, to bring the surface to a smooth texture and to remove all form and other marks. The paste formed by the rubbing may be rubbed down by floating with a canvas, carpet-faced, or cork float, or may be rubbed down with dry burlap.

3A.12 CURING:

a. Freshly-placed concrete shall be protected from rain and flowing water. Concrete shall not be allowed to dry out from the time it is placed until the expiration of the specified curing period. Methods of curing, unless otherwise approved by the Engineer, shall be as follows:

1. Concrete shall be kept wet with clean water for a period of 10 days after placing.

2. Curing may be accomplished by leaving forms in-place, for a period of 10 days, and keeping exposed surfaces of the concrete wet and the forms sufficiently wet to prevent opening of joints.

3A.13 FABRICATION AND PLACING REINFORCING STEEL:

A. Placing drawings, detail drawings, and bar list shall be checked by the Fabricator and Contractor, and submitted to the Engineer for approval prior to any fabrication of the material in submitted drawings and lists. Bars shall be free from flaws, cracks or other defects of rolling, shall be true to size and shape, and shall be free of loose scales of rust. A thin coating of firmly attached rust shall not be cause for rejection. Bars shall be free from heavy dirt, paint, grease, oil, or other destroyers of bond. They shall be pre-fabricated to detail and delivered on the job plainly tagged and ready to set.

b. Bar supports for reinforcing steel, except for footings, shall be supported and spaced in the forms with approved recommendations of the ACI-315 detailing manual and as shown on the drawings.

c. Reinforcement shall be placed in the locations shown on the drawings.

3A.14 DEFECTIVE WORK:

a. Imperfect and damaged work shall be satisfactorily removed; new work and materials, which are in accordance with the requirements of the Drawings and Construction Specifications, shall be furnished and installed at no additional expense to the Owner. Removal of concrete work and installation of subsequent work and materials, shall be accomplished in a manner which will not impair the strength of the structure.

DIVISION 5
METALS
SECTION 5A
MISCELLANEOUS METALS

5A.01 DESCRIPTION:

a. Miscellaneous metals, including structural steel, sheet metal, aluminum, and stainless steel, shall be furnished, fabricated, and installed as indicated.

5A.02 STRUCTURAL STEEL:

a. Design of structural steel members is based on ASTM A36-75 steel. Other grades of steel specified in the latest AISC Specifications may be used with the approval of the Engineer, provided the structure has the same capacity and same deflection. Fabrication and erection shall be in accordance with AISC requirements.

b. Unless otherwise shown, connections shall be welded. Connection design shall be based on the full strength of the member for uniform loading. High strength bolting may be used for field connections, if approved by the Engineer.

c. Welding under these Specifications may be done by the MIG, TIG, or "Electrode" method in accordance with AWS-ASTM Specifications No. E-6012 (Electrode Method Only). All welding shall be done with AC-DC wire (MIG, TIG) or coated electrodes. All weld joints shall be cleaned of weld spatter and flux. All cut edges and welds shall be ground smooth. In assembling and during welding, the component parts of built-up members shall be supported and held by sufficient clamps and other adequate means to hold the parts in proper relation for welding.

c. High strength bolts shall be in accordance with ASTM A325-76a. Installation shall be in accordance with "Specifications for Structural Joints Using ASTM A325 Bolts" published in October, 1962, by the ASCE Structural Division.

e. Structural steel members exposed to weather shall be hot-dipped galvanized. Exposed surfaces of steel and iron not exposed to weather shall be painted in the shop as specified under "PAINTING". Contact surfaces for bolting or welding in the field shall be left bare and painted promptly after the field connection is completed.

5A.03 METAL FRAMING SYSTEMS:

a. Metal framing systems used for support of pipes, conduit, or equipment shall be 1-5/8" by 12 gauge continuous slot, galvanized channels. All bolts, nuts, and fittings shall be zinc coated and shall be manufactured by the manufacturer of the channel.

5A.04 STAINLESS STEEL

a. Unless otherwise specified, all bolts, nuts, and fabricated work indicated on the plans and/or specified to be stainless steel shall be Type 316, made under ASTM A276-75.

DIVISION 7
THERMAL AND MOISTURE PROTECTION
SECTION 7A
CAULKING

7A.01 DESCRIPTION:

a. This Section covers the installation of caulking and sealants.

7A.02 EXTERIOR WALLS:

a. Holes in exterior walls resulting from the removal of conduits or piping shall be sealed. The hole shall be cleaned of all loose mortar and dust, wetted, and packed with mortar. The mortar shall be waterproofed with Truscon Mortite Waterproofing or equal.

b. Joints between new conduits and masonry, and existing conduits and masonry, shall be caulked.

7A.03 WINDOWS AND DOORS:

a. All joints around windows, door frame, louver, and exhaust fan in the old river water pumping station shall be caulked.

7A.04 CAULKING MATERIALS:

a. Sealing compound for exterior and interior use shall be of one part synthetic rubber base sealant or a two component rubber base material. Approved sealants for one part use are PRC-5000, GE Silicone, Tremco's Mono. Approved sealants for two part synthetic rubber base material are Tremco's Dymeric, PRC-250, Sonneborn Sonnelastic Sealant.

b. Joint backing shall be closed cell polyethylene round shape and shall be non-staining, non-absorbent and capable of at least 30% recovery.

7A.05 APPLICATION:

a. All joints shall be clean and free of dirt, oil, grease, moisture, loose mortar or other foreign matter. Metal surfaces shall be wiped wth Xylol or MEK and then dried. Masonry surfaces shall be cleaned with wire brush and then bone clean. Any waterproofing treatments contaminating joints shall be completely removed. Joints that are 1/2" wide, shall be packed to 1/2" of the surface. Joints that are 3/4" wide shall be packed to 1/4" of the surface. Size of joint backing shall be large enough so that they can be compressed approximately 30% before inserting into the joint.

b. The sealant shall be applied with a hand gun or air gun under sufficient pressure and through nozzle opening so that

a full bead of sealant is running through the joint and fills the opening completely. All beads should be tooled immediately after application to insure firm and full contact with the inner face of the joint.

c. All sealants shall be applied by skilled applicators having at least 2 years experience. Work shall be of highest quality in compliance with spcifications. All joints shall be water and weather tight.

DIVISION 9
FINISHES
SECTION 9A
REPAIRS, PATCHING, AND PAINTING

9A.01 DESCRIPTION:

a. This Section covers repairs to the building structures and finishes necessitated by the removal of existing materials or equipment and the painting of new work.

9A.02 CEILING TILE:

a. Ceiling tile in suspended ceilings damaged by the installation of new work shall be replaced with new.

9A.03 HOLES AND OPENINGS

a. All holes and openings in the building walls, ceilings, or floors, resulting from work performed under this contract shall be patched.

1. Small holes resulting from the removal of screws, bolts, or anchors shall be filled with waterproof mortar, grout, or plaster.

2. Openings through walls resulting from the removal of conduits shall be patched with mortar in masonry walls and wood plugs in stud partition walls.

3. Openings in masonry walls resulting from the removal of flush mounted equipment shall be patched with the same material as the wall.

4. Holes in floors shall be patched with waterproof concrete and sealed with waterproof sealant.

9A.04 PAINTING

a. Surfaces to be painted in this contract consist of:

1. New structural steel and framing channel used in the interior of the buildings.

2. Patched holes and openings.

3. Areas of walls or ceilings where the removal of equipment or conduits has marred the existing finish.

4. Exposed conduits on walls in Control Building only.

b. Materials shall be delivered in unbroken original containers bearing the manufacturer's name, trade name, mixing instructions, and application instructions. Paint manufacturers

shall be Koppers Co., Indurall Coatings, Inc., or Industrial Paint Co.

c. Paint shall be applied neither on damp and frosty surfaces, nor during wet, foggy, and freezing weather. Surfaces to be painted shall be made free of dust and other foreign matter before paint is applied; surfaces shall be completely dry before paint is applied. Iron and steel, which has been shop primed, shall have all abrasions in the priming coat cleaned to bright metal to remove all scale, ridges, rust, and faults in the prime coat. Weld splatter shall be removed and that area reprimed. Voids, and open and hollow places, shall be repaired with a material compatible with the surface to be repaired. Paint shall be spread and brushed out so that there shall be no drops, runs, and sags in the coating. Where runs, sags, and drops do occur, they shall be removed and the surface shall be re-coated. Paint shall be dry before additional coats are applied. Drop cloths shall be used to protect surfaces of the structure and equipment in place and, upon completion of work, paint spots shall be removed from surfaces and defaced surfaces shall be re-finished. Painting found to be defective, and that applied under adverse conditions, shall be removed and new paint shall be applied. Where more than one coat is required, undercoats shall be job-tinted.

9A.05 STRUCTURAL STEEL:

a. Before leaving the shop of the fabricator, structural steel shall be cleaned of all foriegn matter, loose black scale, and rust, and shall receive a priming coat, as listed in Painting Schedule, applied in the shop at the rate of 250 square feet per gallon, and allowed to dry 48 hours. If the prime coat is damaged, whether during transit or construction, or has deteriorated due to long exposure to the elements, the metal shall be cleaned and touched-up or re-primed.

9A.06 PAINTING SCHEDULE

SURFACES	APPLICATION	REFERENCE MANUFACTURER KOPPERS CO.
1. Structural steel and Miscellaneous Iron and Steel	Shop Primer One (1) Coat	Rust-Inhibitive Primer No. 622
(a) All interior miscellaneous iron and steel	Finish Two (2) coats	Glamortex 501 Enamel Eye Rest Green 369-Gloss
2. Exposed Electrical Work *	Treatment Field Primer	40 Passivator Rust Inhibitive

		One (1) coat	Primer 622
		Finish	Ramuc Utility Enamel
		Two (2) coats	
3.	Interior Concrete and Concrete Unit Masonry	Primer	Ramuc Utility Under-
		Two (2) coats	coater
	(a) Concrete Columns	Finish	Ramuc Utility Enamel
	*	One (1) coat	
	(b) Concrete Unit Masonry Walls	Primer	Ramuc Utility Under-
		Two (2) coats	coater
	*	Finish	Ramuc Utility Enamel
		One (1) coat	Surface above Dado
4.	Exposed Concrete Ceilings	Primer	Ramuc Utility Under-
		Two (2) coats	coater
	*	Finish	Ramuc Utility Enamel
		One (1) coat	

* Color to match existing finish.

DIVISION 15
MECHANICAL
SECTION 15A
GENERAL

15A.01 DESCRIPTION:

a. These MECHANICAL GENERAL provisions specified herein apply to all Sections of Division 15.

15A.02 SPACE CONDITIONS:

a. Drawings indicate locations of fixtures, apparatus, ductwork and piping, and while these are to be followed as closely as possible, if it is necessary to change the location of same to accommodate building conditions, make changes without additional cost to the Owner and as approved by the Architect.

b. Provide access to equipment and apparatus requiring operation, service or maintenance within the life of the system.

c. Do not run piping or ductwork, or locate equipment, with respect to switchboards, panelboards, power panels, motor control centers or dry type transformers:

(1) Within 42" in front of equipment.

(2) Over equipment, or within 36" horizontally of same space.

15A.03 CONTINUITY OF SERVICE:

a. Schedule work so existing systems will not be interrupted when they are required for normal usage of the existing building.

b. Perform work at such time and in such manner as to cause minimum inconvenience to the Owner and as approved by the Architect. No allowance will be made for lack of knowledge of existing conditions.

15A.04 PROTECTION OF WORK DURING CONSTRUCTION:

a. Provide protective covers, skids, plugs or caps to protect equipment and materials from damage and deterioration during construction.

15A.05 EXISTING EQUIPMENT & SYSTEMS:

a. Remove all existing steam unit heaters, steam, condensate return, vent and drain piping and insulation, condensate return pump, and all boiler controls. Only the boiler, boiler vent, and gas piping shall be reused. All new gas controls, boiler controls, steam unit heaters and controls;

steam and condensate return piping and insulation, and condenser return pump and controls shall be installed as hereinafter specified.

b. Sleeves left open by removal of piping shall be cut flush with the finished slab, filled with cement grout flush with both sides of slab.

c. Existing unit heaters and other materials, which are removed shall be removed from the premises.

d. Material and equipment which has been removed shall not be used in the new work.

15A.06 RELATED WORK DESCRIBED IN OTHER DIVISIONS:

a. Painting, except as specified herein.

b. Electric power, interlock and control wiring, except as specified herein.

c. Installation of starters, contactors, thermal overload switches, and remote push buttons, except as specified herein.

15A.07 LAYOUT BASIS:

a. The system layout is based upon the use of particular items of equipment, with such items identified by manufacturers make and model number. Physical dimensions, arrangement, and service connections required for these particular items have been considered in making the layout. The Contractor may use the equipment of any manufacturer whose name is approved for substitution for that item of equipment after he has ascertained in writing that all provisions of "SPACE CONDITIONS" will be complied with and that all required service connections will be made at no additional cost to the Owner.

b. Should investigation of shop drawings disclose that the above mentioned requirements cannot be met using the proposed substitute equipment, then the specified "Layout Basis" equipment shall be provided.

15A.08 SHOP DRAWINGS:

a. Mark shop drawings indicating the particular make, model number, accessories, options and specification paragraph numbers. Shop drawings for equipment to be mounted on vibration isolators shall include operating weight and load distribution at each mounting point.

b. Submit shop drawings listed below:

(1) Foundations and housekeeping pads showing contact surfaces and overall outlines of equipment mounted thereon

(2) Insulation

(3) Gauges

(4) Pumps and pump curves

(5) Controls including control diagrams, control panel layouts, descriptions of operation and cuts of instruments

(6) Valves

(7) Unit heaters

(8) Steam heating specialties

(9) Boiler trimmings and controls

(10) Electric heating units

(11) Dampers

(12) Louvers and screens

(13) Fans

15A.09 MAINTENANCE DATA:

a. Submit three manuals covering details of operation and maintenance for all apparatus requiring service including:

(1) Service telephone number of the installing contractor.

(2) Manufacturer's operating and maintenance manuals, including parts lists, for each piece of equipment and accessory requiring service or maintenance, the guarantee period and the name, address and phone number of the nearest sales and service organization for each item.

(3) Step-by-step procedure for starting and stopping each system including a step-by-step procedure for firing the boiler.

(4) Temperature control diagrams.

(5) As installed boiler piping diagram, gas piping diagram and boiler control wiring diagram.

(6) Copies of inspection certificates provided by the City, County, State and insurance companies.

b. A copy of the diagrams, start-stop procedure and valve list shall also be framed under glass and mounted in the Boiler Room.

15A.10 CLEANING:

a. Before installing thermostatic members of the steam traps, and connecting return mains to the return pumps, pipe the return mains outside the building and blow down the steam piping system until thoroughly clean. Open automatic steam valves while blowing down.

b. Remove all stickers, rust, stains, labels, and temporary covers before final acceptance.

c. Remove foreign matter from equipment, piping and ductwork systems and appurtenances.

d. Clean and polish identification plates.

15A.11 GUARANTEE:

a. That each piece of apparatus shall be of the customary standard and quality furnished by the designated manufacturer for that catalogue number.

15A.12 INSTRUCTION OF OPERATING PERSONNEL:

a. Arrange formal instruction sessions for the Owner's operating personnel, covering:

(1) General familiarization and operating procedures for the entire mechanical installation.

(2) Routine maintenance procedures for all mechanical equipment.

(3) Specific operating and maintenance procedures for the boiler.

(4) Specific operating and maintenance procedures for the automatic control systems.

b. Obtain receipt from the Owner's representative acknowledging completion of each item of instruction.

15A.13 HANGERS AND SUPPORTS:

a. Where several pipes 2-1/2" and smaller run parallel and in the same plane, they may be supported on gang or multiple hangers; larger piping shall be independently hung, parallel and equally spaced.

b. Supports for steel pipe and for copper tubing 1-1/4" or larger, shall not be more than 10' apart. Supports for copper tubing 1" and smaller shall be not more than 8' apart. Pipes shall be supported within 1' of each elbow.

c. Hangers and hanger rods for steel and cast iron pipe shall be wrought or malleable iron.

d. Steam, and condensate risers shall be anchored and allowance made for expansion.

e. Pipe hangers for steel pipes 2-1/2" and smaller, shall be split ring type, adjustable swivel ring hangers; Grinnell 104, Fee & Mason 199, or Elcen 92.

f. Hangers shall be complete with rods and supports proportioned to the size of pipe to be supported.

g. Inserts installed in existing concrete construction and for piping 2-1/2" and smaller shall be Rawl "SABER-TOOTH", or Phillips "RED HEAD", self drilling shells.

h. Support piping in bar joist construction with Grinnell 67 or 64 or Fee & Mason 260 clamps.

i. Do not pierce waterproofing with support bolts.

j. Size hangers for insulated piping to bear on outside of insulation except split ring hangers for plumbing and heating piping may be installed bearing on the pipe.

15A.14 SLEEVES:

a. Provide where pipes pass thru walls, floors and roofs except cast iron pipe through masonry walls may be built into the walls.

b. Sleeves shall be standard weight steel pipe except sleeves for concealed piping thru floors, not in structural members, may be 26 gauge galvanized sheet metal or molded plastic.

c. Floor sleeves for exposed piping shall extend from the bottom of the slab to 4" above the finished floor in equipment and fan rooms, 3/8" above finished floor elsewhere.

d. Wall sleeves shall be full thickness of walls.

e. Sleeves may be omitted when openings are core drilled for vertical concealed piping and horizontal piping.

f. Make sleeves thru outside walls watertight. Caulk between uninsulated pipe and sleeve with oakum and lead. Pack and caulk between insulated pipe and sleeve.

g. Size sleeves for insulated pipes to allow full thickness insulation.

15A.15 MOTORS AND STARTERS:

a. Provide motors for equipment covered herein unless otherwise specified. Starters, push buttons, and thermal overload switches and contactors, not factory installed, is specified under another Division.

b. Motor H.P., voltage, and phase ratings shall be as indicated. Motors shall operate below the Service Factor rating.

15A.16 DRIVE GUARDS:

a. Provide guards shielding the perimeter and face of all new belt drives, shafts and couplings. Provide openings opposite driver and driven shafts to permit use of revolution counter.

b. Double inlet fan guards shall have face made of expanded metal.

15A.17 FOUNDATIONS:

a. Provide foundations for floor mounted equipment covered herein except where otherwise specified.

b. Concrete foundations shall conform to the following schedule:

Pumps, Floor Mounted	4" high pad

c. Concrete shall be 1:2:4 mix with neatly beveled edges and all surfaces rubbed smooth prior to mounting equipment.

d. Moisten structural slabs below pads and curbs and apply a sand-cement grout before pouring concrete.

15A.18 ACCESS PANELS - BUILDING:

a. Where mechanical work is concealed in walls or ceilings, and is otherwise inaccessible, provide a hinged invisible type access panel complete with frame, sized and located to provide access for service and maintenance.

b. Minimum size of 12" x 12" for hand holes, 18" x 18" elsewhere.

c. Panels in acoustical tile ceilings shall be designed to accept tiles. Minimum size 12" x 24".

d. Mechanical work located above push up type acoustical tile or metal pan ceilings, is considered accessible if the ceiling is arranged for access to the space above.

15A.19 ESCUTCHEONS:

a. Provide nickel-plated cast iron wall, floor, and ceiling plates sized to fit over insulation and to cover sleeves where exposed piping passes thru walls, floors and ceilings in finished areas; Ritter Pattern & Casting #3A where sleeves extend above floor finish, Ritter #36A, elsewhere.

15A.20 IDENTIFICATION OF PIPING:

a. Identify piping specified under this division with Brady or equal pressure sensitive plastic tape with size legend as follows:

Diameter (Including Insulation)	Size of Legend Letters
3/4 - 1-1/4"	1/2
1-1/2 - 2	3/4
2-1/2 - 6	1-1/4
8 - 10	2-1/2
Over 10	3-1/2

b. Legends shall be in full form, in contrasting color to background color. Where practicable, legends shall be on the lower quarters of the pipe.

c. Locate pipe identification as follows:

(1) Mechanical Equipment Rooms:

A. Within 3' - 0" of each 90° elbow, connection to equipment or vessel, point where pipe enters shafts and pierces outside walls.

B. On not over 20' intervals along all exposed piping.

(2) Above suspended ceilings:

A. Within 1' - 6" of each valve or valve assembly.

B. At tees within 3' of both main and branch.

C. Within 3' of each 90° elbow.

(3) Piping Concealed in Chases or Shafts:

A. Each pipe visible through an access door or panel.

(4) Piping Exposed in Rooms other than Mechanical Equipment Areas:

A. Omit identification of piping, 1/2" and smaller, exposed at connections to equipment or plumbing fixtures.

B. With the above exception, identify at not less than 1 point each piping run visible in each room with identification on not over 20' intervals.

d. Schedule of Piping Identification:

Piping Systems and Contents	Band or Tape Colors	Stenciled Legends
Water Supply		
Cold Water	Green	Cold Water
Hot Water	Green	Hot Water
Heating		
Steam (Supply)	Yellow	Steam Supply
Steam (Return)	Yellow	Steam Return
Miscellaneous		
Gas	Yellow	Gas

15A.21 PAINTING:

a. Except where otherwise specified, painting shall be done under another Division. Surfaces shall be left clean and free from oil.

b. Finishes of factory painted apparatus shall be touched up where finish is marred in installation.

15A.22 RECORD DRAWINGS:

a. Upon completion of the work, the Contractor shall submit a clean set of blue-line white prints marked in red pencil to indicate all deviations from the plans and specifications.

b. A record of deviations shall be kept throughout the progress of the job and shall be used in the preparation of the "record" drawings.

c. The "record" drawings shall indicate all corrections and changes to, or deviations from, the contract drawings made by the Contractor.

DIVISION 15
MECHANICAL
SECTION 15B
HEATING & VENTILATION

15B.01 DESCRIPTION:

a. General Provisions and other Mechanical Systems are specified in other Sections of Division 15.

b. This Section covers Heating systems and equipment.

c. The heating system is designed to maintain an inside temperature of 70°F. when the outside temperature is 18°F.

15B.02 QUALITY ASSURANCE:

a. Piping systems shall meet requirements of the applicable sections of the A.S.M.E. Code and the ANSI Code for Pressure Piping.

b. Pressure/temperature ratings of all components shall meet or exceed design conditions for the system in which they are installed. All components and speciality items shall be designed for an operating pressure not less than 125 psig at the maximum temperature they will encounter in this system.

c. Install the gas system to conform to AGA and NFPA requirements, and rules of the Gas Company.

d. Codes and regulations referred to are minimum standards. Where the requirements of these specifications or drawings exceed those of the codes and regulations, the drawings and specifications govern.

15B.03 BOILER OPERATING CONDITIONS:

a. The fuel to be used for Boilers will be natural gas.

b. The natural gas will have a heat value of 1000 BTU per cubic foot at a 11" minimum pressure, and 60°F. and a specific gravity of 0.6.

c. Each boiler will operate normally at 12 P.S.I.G. pressure.

15B.04 GAS PIPING:

a. Pitch horizontal piping up from meter uniformly not less than 1/2" in 30 feet. Take branches from the sides or top of horizontal mains.

b. Avoid "traps" in the piping. When traps are unavoidable, provide a tee with a 6" nipple and cap to form a drip for draining. Provide a drip at the base of each vertical

riser. Install drips so the outlet of drip will be accessible for cleaning or draining and condensation will not freeze.

c. Use fittings to make turns and to change pipe sizes and where pipe intersections occur. The use of bushings will not be allowed.

d. Manual cocks shall be Rockwell Fig. 114 for sizes 2" and smaller and Fig. 115 for sizes larger than 2", lubricated plug type with operating handle attached. Attach handles such that they will be parallel to the gas flow when in the open position.

e. No device shall be placed inside the gas piping or fitting that will reduce the cross-sectional area or otherwise obstruct the free flow of gas.

15B.05 GAS VENT PIPING:

a. Provide vent piping from the relief opening of the gas pressure regulator and gas pressure switch to a point outside the building at least 10 ft. above finished grade, and at least 5 ft. from any building opening. The vent connection to each regulator or switch shall be increased when 2 or more appliances have been connected so that the common vent will be equal or greater than the sum of the cross sectional areas of all individual vents involved. The common vent shall be a minimum of 3/4" size.

b. Terminate vent lines with an O.P.W. #113 flash arrestor.

c. The vent line from the pressure regulators and switches shall not be common with the vent line from the gas main.

15B.06 FEED, DRAIN, BLOW-OFF AND GAS CONNECTIONS:

a. Make a 3/4" feed connection from an outlet in the water supply piping to the boiler and provide a 3/4" drain pipe from the outlet indicated. Provide a 3/4" brass drain cock with hose thread, lock shield and loose key on the drain pipe.

15B.07 DUPLEX CONDENSATE PUMP:

a. Furnish and install as shown on the plans an ECONOMY type CCHA duplex condensate return pump having a capacity of 4,000 sq.ft. EDR or 6 GPM at 20 lbs per sq. inch of discharge pressure at each pump.

b. Pump shall be of the centrifugal, close-coupled type, with a leakless mechanical seal, enclosed balanced bronze impeller, replaceable bronze wearing ring, stainless steel shaft and cast iron pump casing. The pump shall be so constructed that access to impeller and other interior parts without disturbing pipe or electrical connections.

c. Motors to be close-coupled NEMA design of 1/3 HP, 3450 RPM, 115 volts, 1 phase, 60 cycles, open drip proof enclosure. Duplex unit to have heavy duty general purpose mechanical alternator with copper-clad float, rod and stops. Alternator to automatically start second pump if first pump cannot handle load.

d. Unit to have cast iron receiver. Run vent pipe full size of vent tap on the receiver to a point near the ceiling and return to a point near the floor.

e. Equal pumps by Aurora, Hoffmann or Weinman will be acceptable.

15B.08 GAUGES:

a. Provide Ashcroft #1020A, or equal Duro or Marsh standard pressure gauges. Gauges shall be of the bronze bourdon Tube Type with 4-1/2" white dial, black lettering, 1/4" lower connection, stainless steel case. Dial ranges shall be as listed below, with adjustable micrometer pointer.

SERVICE	RANGE
Steam (0-15 psig.)	0-30 pounds

b. Provide a syphon and shut-off cock for each gauge. Syphons shall be 1/4" I.D. minimum and of non-ferrous construction. Shut-off cocks shall be Ashcroft Type 1095, or equal Duro or Marsh.

15B.09 STEAM UNIT HEATERS:

a. Install unit heater as high as possible using steel hangers.

b. Capacities shall be based on 60°F. entering air and 2 p.s.i.g. steam.

c. Fan motors shall be single speed and wound for 115 volts, single phase, 60 cycle current.

d. Provide for each unit heater a line voltage thermostat, adjustable from 50°F. to 80°F.

e. Provide horizontal and vertical deflector vanes on horizontal discharge unit heaters.

f. Heaters shall be Nesbitt, Modine, Trane, Sterling, or equal.

15B.10 ELECTRIC UNIT HEATER:

a. Provide electric unit heater complete with heating elements, fan motor, propeller type fan, thermal overheat switch, adjustable outlet air louvers, heavy duty housing, provisions for wall mounting as shown, built-in contactor, motor circuit

step-down transformer, and with enclosure for wiring connections, all factory assembled as a complete unit. For use with each unit heater, furnish pilot duty thermostat.

b. The unit heater shall be equipped with enclosed metal sheathed finned tubular heater elements with corrosion resistant finish, factory connected for operation on 480 volt, 3 phase power supply. Automatic reset thermal overheat switches shall be factory installed as a component part of each heater.

c. The unit heater shall be equipped with a fan motor of the totally enclosed, continuous duty, sleeve bearing type equipped with built-in thermal overload protection, mounted inside of a combination fan guard and resiliently mounted motor support. The fan motor shall be factory connected to the heating element power supply thus eliminating the necessity for separate motor circuit. The heater shall be equipped with a broad bladed aluminum fan direct connected to the fan motor, and dynamically balanced. The complete heater assembly shall be enclosed in a heavy gauge steel casing which shall be finished in manufacturer's standard baked-on enamel finish.

d. All unit heaters shall be listed by the Underwriters' Laboratories.

e. Heaters shall be Chromalox "LUH" suspension type, or approved equal.

15B.11 GENERAL FOR HEATING PIPING:

a. Where anchors are noted secure the piping to the building structure with rigid angle iron frames welded to the pipe.

b. Arrange piping to minimize stresses caused by expansion and contraction.

c. Expansion in the lines shall be taken up by means of expansion loops and offsets as indicated on the drawings.

d. Make connections to heating equipment as shown on drawings.

e. Install piping so as to preserve access to all valves, air vents, and other equipment and to provide the maximum headroom possible.

f. Provide drip points where shown on the drawings, at the ends of steam circuits, and where a rise in elevation of the steam pipe occurs.

g. Install exposed piping such that when covering is applied it will not come in contact with adjacent surfaces.

15B.12 STEAM SUPPLY AND RETURN PIPING:

a. In general, branches shall be taken from tees in the main, turned upward at 45° and connected to the horizontal run of the branch with a 45° elbow. Lateral connections from mains to down feed risers shall be taken from the bottom of mains and pitched down toward riser 1" in 5'-0".

b. In general, the supply and return mains shall pitch downward 1/2" in 20'-0" in the direction of flow. Changes in size of all horizontal supply piping shall be made with eccentric reducers to maintain a uniform pitch.

15B.13 PIPE AND FITTINGS:

a. Low pressure steam supply and return piping, except as hereinafter specified, shall be schedule 40 ASTM A-120 black steel pipe with cast iron screwed fittings, ANSI B16.4, 125LB. class, up to and including 2". Fittings larger than 2" shall be black steel butt welded type of a service class to match the adjacent pipe, except that connections to valves and equipment shall be made with flanged fittings, 125LB. class, conforming to ANSI B16.1. Companion flanges shall be forged carbon steel ASTM A-181, Grade 1, 150LB. class, flat face slip-on or welding neck type, conforming to ANSI B16.5. Flanges shall have bolts with hexagon heads and nuts and shall be made up with gaskets as specified under PIPE JOINTS.

b. Except as hereinafter specified, all gas supply and vent piping shall be schedule 40 ASTM A-120 black steel pipe with black banded malleable iron screwed fittings, ANSI B16.3, 150LB. class, up to and including 2". Fittings larger than 2" shall be black steel butt welded type of a service class to match the adjacent pipe except that connections to valves and equipment shall be made with flanged fittings, 150LB. class, conforming to ANSI B16.5. Companion flanges shall be forged carbon steel ASTM A-181, Grade 1, 150LB. class, slip-on or welding neck type, conforming to ANSI B16.5. Flanges shall have bolts with hexagon heads and nuts and shall be made up with gaskets as specified under PIPE JOINTS.

c. Gas pilot main piping shall be black steel as specified above, but pilot branch piping from connections from regulators and switches to vent mains as shown on the drawings shall be seamless copper tubing of standard type "L" complying with ASTM Specification B 88-62, with flared type brass fittings. Aluminum tubing shall not be used.

d. Cold water make-up piping, and boiler relief valve discharge piping shall be type "L" hard drawn copper conforming to the latest ASTM designation B-88, with wrought copper sweat fittings, made to ANSI B16.22, meeting ASTM B-75.

e. Synthane, Universal, or EPCO dielectric couplings shall be provided for connecting steel and copper piping.

f. Provide a union in the connection to each piece of apparatus so that it may be readily removed without cutting the pipe.

g. Unions in black steel or copper nickel alloy steel piping 2" and smaller, except as hereinafter specified, shall be black malleable iron, ground joint, bronze seated of the service class to match the adjacent piping, with screwed end connections.

h. Unions in black steel or copper nickel alloy steel piping 2-1/2" size and larger shall be flanged pattern of the service class to match the adjacent piping.

i. Unions in copper piping shall be cast brass or bronze with copper soldered connections.

j. Strainers shall be provided as indicated. Strainers shall be of the "Y" type and shall have stainless steel screens with the area of perforations of not less than 2 times the internal area of the pipe in which the strainer is installed. Strainers up to and including 2" size shall have iron body, screwed connections and 1/16" perforations in screen. Strainers 2-1/2" size and larger shall have iron body, flanged end connections, 1/8" perforations in screen, and shall be provided with a 3/4" gate valve and a hose-end threaded nipple blowdown. Strainers shall be designed for 125 psig WSP.

k. Strainers 2" and smaller shall have screwed ends, 2-1/2" and larger shall have flanged ends.

15B.14 PIPE JOINTS:

a. Make screwed joints in steel piping with teflon tape unless otherwise specified. Threads shall be clean cut and tapered; not more than 2 threads shall show when joint is made tight. Ream burrs from inside of the pipe, turn pipe on end and knock out all loose dirt and scale.

b. Nipples having less than 1" between threads shall be extra strong.

c. Flared joints shall be uniform and free from cracks or flaws and shall be fully flared with flaring tool.

d. Make flanged joints, except in gas piping, with 1/16" thick, ring type, compressed asbestos composition sheet gaskets. Make flanged joints in gas piping with aluminum "O" ring gaskets. Gaskets shall extend to inside of bolt holes.

Bolts and nuts shall conform to applicable portions of ASTM Standards A-194 and A-307.

e. Welding shall be in accordance with procedures of the National Certified Pipe Welding Bureau and shall comply with the requirements of the ANSI Code for Pressure Piping, B31.1. Welders shall be qualified under the above procedures and certified by the National Certified Pipe Welding Bureau or other recognized testing authority.

f. Make changes in direction and pipe size, and intersections of lines with fittings.

g. Where branches 2 or more sizes less than the size of the main are taken off, the mains may be burned out and welding nipples similar to Weldolet made by Bonney Forge Company used.

h. Make sweat joints in copper piping with tin antimony 95-5 solder and a petroleum base flux, as recommended by the manufacturer of the pipe.

i. Heat shall be applied to the fitting in such a manner as not to overheat the fitting.

15B.15 VALVES AND TRAPS:

a. Low pressure steam supply mains and the heating equipment, shall be dripped through float type drip traps with thermostatic air by-pass. Drip traps shall be Hoffman series 50, or equal, Sarco, Armstrong or Webster. The traps for the heating equipment shall be equal to the above but with the capacity to pass the condensate from the equipment with not over 1/4 psi pressure drop.

b. Provide gate, globe and check valves throughout the piping systems where shown and where necessary to properly regulate and control the systems. Valves shall be the full size of the lines and shall be designed for low pressure drop. Gate and globe valves shall have provision for repacking when open and under pressure. Check valves shall be horizontal swing check type with regrinding seats and rotating discs. Check valve hanger pins shall be supported at both ends by removable side plugs.

c. Gate, globe and check valves shall be Crane, Jenkins Bros., Lunkenheimer, Pratt & Cady, or Kennedy, and all valves shall be of the same manufacture.

d. Valves shall be as follows:

(1) Valves and cocks shall be designed for 125 psi WSP.

(2) Gate, globe and check valves shall have screwed end connections on valves 2" and smaller and flanged end connections on valves 2-1/2" and larger.

(3) Gate valves 2" and smaller shall be bronze body, wedge-disc type, with inside screw bonnet.

(4) Gate valves 2-1/2" and larger shall have iron body with brass mountings, outside screw and yoke, and shall be of the wedge-disc type.

(5) Globe and angle valves 2" and smaller shall have bronze body. Globe valves in by-pass lines or valves used for throttling service shall have 500 Brinnell hardness plug discs and seat rings. Other globe valves shall have composition discs suitable for the intended service.

(6) Globe and angle valves 2-1/2" and larger shall have iron bodies, with bronze mountings, outside screw and yoke, and composition discs suitable for the intended service.

(7) Check valves 2" and smaller shall have bronze body.

(8) Check valves 2-1/2" and larger shall have iron body.

(9) Boiler stop valves shall be of the automatic non-return stop and check type, cast iron bronze mounted.

15B.16 MOTOR OPERATED SHUTTERS:

A. Aluminum blades mounted in steel or aluminum frames, steel trunnions riding in self lubricated bushings, neoprene edged blades linked to operate as a unit. Motor to be 115 volt, 1 phase, spring return.

15B.17 LOUVERS & SCREENS:

a. Extruded aluminum construction 4" deep with anodized finish; Air Balance #602, Airline XB-6, Airolite K-6096, American Warming #1663, Carnes L24, Dowco LEB, Louvers & Dampers #EL-6-302 or Construction Specialities #6120. Screen shall be 1/2" square mesh, 16 gauge aluminum in folded frame attached to outside face of louver.

15B.18 CENTRIFUGAL FAN:

A. Provide Cook or equal CMD-12 centrifugal blower where shown on the drawings. Blower shall be of all aluminum construction, direct drive, and complete with weatherproof motor housing. Fan shall be AMCA rated.

DIVISION 15
MECHANICAL
SECTION 15C
INSULATION
PART 1: GENERAL

15C.01 DESCRIPTION:

a. The GENERAL PROVISIONS and Mechanical Systems are specified in other Sections of DIVISION 15.

b. This section covers thermal insulation for piping specified in Division 15.

15C.02 QUALITY ASSURANCE:

a. Products of the manufacturers listed under MATERIALS will be acceptable for use for the specific functions noted. All materials shall be compatible with the materials to which they are applied, and shall not corrode, soften or otherwise attack such material in either the wet or dry state.

b. Materials shall be applied subject to their temperature limits. Any methods of application of insulating materials or finishes not specified in detail herein shall be in accordance with the particular manufacturer's published recommendations.

c. Insulation shall be applied by experienced workers regularly employed for this type work.

15C.03 RATING:

a. Insulation and accessories, unless specifically excepted, shall have a composite flame-spread rating of not more than 25 and a smoke developed rating of not more than 50. Materials that are factory applied shall be tested as assembled. Materials which are field applied may be tested individually. No fugitive or corrosive treatments shall be employed to impart flame resistance.

b. Flame Spread and Smoke Developed Ratings shall be determined by Method of Test of Surface Burning Characteristics of Building Materials, NFPA No. 255, ASTM E-84, UL 723.

c. Products or their shipping cartons shall bear a label indicating flame spread and smoke developed ratings.

d. Treatment of pipe jackets and duct facings to impart flame and smoke safety shall be permanent. The use of water-soluble treatments is prohibited.

e. Vapor barriers shall have a perm rating of not more than .05 perms. Adhesives, coatings and mastics shall have a perm rating of not more than .25 perms.

15C.04 SUBMITTALS:

a. Certification prior to installation, that products to be used meet RATING criteria.

PART 2: PRODUCTS

15C.05 MATERIALS:

a. Fiber Glass Pipe Covering:

Certain-Teed
Johns-Manville
Owens-Corning Fiberglas

b. Adhesives and Mastics:

Foster
Childers
Epolux
Insul-Coustic/Birma
Owens-Corning Fiberglas
Vimasco

c. Preformed Fittings:

Insul-Coustic/Birma
Speedline Fittings

d. Insulating Cements: Asbestos free.

Eagle-Picher
Forty-Eight Insulations
Johns-Manville
Phillip Carey

PART 3: EXECUTION

15C.06 INSPECTION:

a. Surfaces to be insulated shall be clean, dry and free of foreign material, such as rust, scale and dirt when insulation is applied. Perform pressure tests required by other Sections before applying insulation.

b. Where existing insulation is damaged due to the new work, repair damage to match existing work or replace damaged portion with insulation specified for new work.

15C.07 APPLICATION:

a. Insulation shall be clean and dry when installed and during application of any finish.

b. Provide removable and replaceable covers on pumps and equipment that must be opened periodically for inspection, cleaning and repair.

c. Install insulation materials with smooth and even surfaces, jackets drawn tight and cemented down smoothly at longitudinal and end laps. Do not use scrap pieces of insulation where a full length section will fit.

d. Install insulation, jackets and coatings continuous through wall and floor openings and sleeves.

e. Banding wires shall have the twisted terminals turned down into the insulation, except where vapor barrier would be punctured.

f. Finish open ends of pipe insulation as specified for fittings.

g. Fill hollow steel pipe covering protection saddles with fiber glass insulation.

h. Staples are not permitted on pipe insulation.

15C.08 INSULATION FOR HOT PIPE:

a. Insulate pipe, fittings, flanges, unions and valves for:

		Insulation Thickness, inches		
		Up to 2"	2"-4"	4" & above
HEATING				
Low pressure steam	Up to 250 F	1	1-1/2	2
Condensate		1-1/2	2	2-1/2
Boiler feed pump discharge		1-1/2	2	2-1/2

with preformed fiber glass pipe insulation of the thickness indicated and white all service jacket with self sealing lap.

b. Install insulation with jacket drawn tight and side-laps and end joint butt strips secured. End joint butt strips shall be not less than 3" wide and of material identical to jacket.

c. Insulate fittings, flanges, and valves with preformed or mitered fiber glass fittings of equal thickness and composition to adjacent pipe insulation. Wire fittings in place and cover with a smoothing coat of finishing cement. Finish with glass fabric embedded into a coat of white breather coating. Glass fabric shall overlap adjoining insulation at least 2". White fabric and mastic shall be used on exposed fittings.

d. In lieu of fittings for pipe 3" and smaller, hydraulic setting combination insulating and finishing cement may be used. Apply cement to a thickness equal to pipe insulation. Finish same as fittings.

15C.09 INSULATION FOR HOT EQUIPMENT:

a. Insulate condensate pump receiver with 1-1/2" calcium silicate blocks or 1-1/2" 4# minimum density fiber glass board.

DIVISION 16
ELECTRICAL
SECTION 16A - GENERAL

16A.01 EXISTING CONDITIONS:

a. The Contractor in undertaking the work under this contract is assumed to have visited the premises and to have taken into consideration all conditions which might affect his work. No consideration will be given to any claim based on lack of knowledge of existing conditions except where existing conditions are such as cannot be readily ascertained. Any claims relating to conditions which were not readily ascertainable shall be adjusted as provided in the contract for changes in the work.

16A.02 POWER OUTAGES:

a. Portions of the work will require disruption of electrical service to certain items of equipment, in part or total, for either a momentary or prolonged period of time. Scheduling of power outages shall be as specified in Section 1, General and Detailed Requirements. Except as permitted for required power outages, continuity of electrical service to buildings and equipment shall be maintained at all times.

16A.03 ALTERATIONS TO EXISTING WORK:

a. Existing conduits, wiring, outlets, lighting fixtures, panels, and equipment shall be removed, relocated or abandoned as indicated. The existing installation is to remain except where otherwise indicated or specified. All work necessary to interconnect the new work with the existing work and to adapt the existing work to the changes in the structures and systems shall be performed.

b. Where conduits or equipment are indicated to be relocated or reused such materials shall be coordinated at the new location. Where conduits are indicated to be removed, this shall include all unused outlets, nipples, stubs through floors, and all unused equipment served by the conduit. Stubs extending from floors, ceiling, and walls, which cannot be removed shall be cut flush with the surface and the opening sealed.

c. Where conductors are indicated to be removed, they shall be removed in their entirety back to the overcurrent devices serving the conductors.

d. Where conduits are indicated to be abandonded, the conductors are to be removed as specified and the conduit sealed at both ends.

e. Where an area is indicated to have all unused conduits or equipment removed, the foregoing shall apply to all unused conduits, stubs, outlets, fixtures, and equipment in the defined area.

f. All unused openings in outlet boxes, junction boxes, and equipment shall be closed.

16A.04 CODES:

a. The following codes shall govern the installation of the work:

(1) National Electrical Code - 1978 Edition

(2) National Electrical Safety Code, 1977 Edition

(3) Georgia Public Law No. 525 - 1960 "Installation, Etc., of High Voltage Lines".

(4) Local Codes and Ordinances.

16A.05 MATERIALS AND STANDARDS:

a. Standards of the following organizations will be referred to by abbreviations. These standards set the minimum standard for all materials used in the work. Where these standards are amended by the project specifications, such amendments shall be incorporated in the product.

U.L. - The Underwriters' Laboratories, Inc.
N.F.P.A. - National Fire Protection Association
A.N.S.I. - American National Standards Institute
N.E.M.A. - National Electrical Manufacturers' Association
I.E.E.E. - Institute of Electrical & Electronics Engineers
I.P.C.E.A. - Insulated Power Cable Engineers Association
A.E.I.C. - Association of Edison Illuminating Companies

b. All electrical materials shall be new and listed by the Underwriters' Laboratories, Inc., shall meet their requirements and shall bear their label wherever standards have been established and label service is regularly furnished by this agency.

c. Where standards have not been established by the Underwriters' Laboratories and label service or certification service is not available, the manufacturer shall certify that the material has been manufactured, assembled, and tested in accordance with the applicable standards specified.

16A.06 DATA TO BE SUBMITTED:

a. Contractor shall submit seven copies of descriptive literature and comprehensive drawings for approval prior to fabrication.

Drawings shall be complete in all detail, and reflect in a composite manner, the entire assembly proposed to be furnished by the manufacturer. Computor "print-outs" are not acceptable. Wiring diagrams shall be complete with all conductors, terminations, and devices clearly identified

b. Drawings and descriptive literature are required for:

(1) 2.4 KV Switching Station
(2) Power Circuit Breakers & Control House
(3) Voltage Regulators
(4) Medium Voltage Motor Controllers
(5) Motor Control Centers
(6) Transformers
(7) Switchboards
(8) Distribution, Power, and Lighting Panelboards
(9) Motor Controls
(10) 4.8 KV Isolating Switch
(11) KW Demand Controller

c. Descriptive literature only is required for:

(1) 5000V cables
(2) 600V wire and cables
(3) Control cables
(4) Safety and disconnect switches
(5) Individual mounted circuit breakers
(6) Lighting fixtures
(7) Wiring devices
(8) Lightning arrestors
(9) Potheads & pothead compound
(10) Ground detector
(11) Power factor correction capacitors
(12) Surge protection equipment
(13) Pole line hardware, connectors, and insulators
(14) Portable Contactor Lift

16A.07 GUARANTEES & TESTS:

a. The installation shall be entirely free from improper grounds, short circuits, or other defects. All wiring shall have dielectric strength between conductors and between conductors and ground of not less than the value recommended in the National Electric Code. All tests shall be made in the presence of the Engineer or his authorized representative. The Contractor shall furnish assistance in performing these tests as required by the Engineer.

b. All protective equipment shall be operated to show it is in proper operating condition.

c. All control systems shall be checked for correct operation.

16A.08 CONNECTIONS TO MOTORS, EQUIPMENT AND APPARATUS:

a. The Contractor shall furnish and install all power and control wiring to operate the motors, equipment and apparatus.

b. Power wiring to heating and ventilation systems motors and equipment is indicated and described on the Electrical Drawings. Motor control shall be furnished under this Section of the work where so scheduled and called for on the Electrical Drawings. Motor controls specified under other sections will be factory installed in "package" units.

16A.09 SYSTEM VOLTAGE:

a. The distribution system voltage will be a nominal 2400V, 3 phase, 3 wire, ungrounded delta.

b. The control building system voltage will be a nominal 120/208 volt, 4 wire, 3 phase, solidly grounded wye. System voltages for other buildings will be as indicated.

c. Lighting equipment, except where indicated on the drawings, will operate at 120 volts.

d. Motors 1/2 H.P. and larger shall be as indicated. Motors smaller than 1/2 H.P. shall be 120 volt or 200 volt, 1 phase, 60 Hertz.

16A.10 GROUNDING:

a. Minimum requirements for grounding shall be National Electrical Code.

b. Feeder and motor branch circuit conduits shall contain a code sized grounding conductor, in addition to the phase conductors and neutral. This conductor shall be attached to the frame of the equipment served on the load end of the conduit, and shall be electrically continuous to the ground bus in the main switchgear. All panels shall be equipped with a copper ground bus, bonded to the enclosure, with lugs to accommodate all grounding conductors entering the panel.

c. Locknut connections to cabinets, pull boxes, and junction boxes shall be wrench-tight, with locknut projections driven into the opposing metal surface.

d. At dry transformers, the grounding conductor included with feeder conductors shall not be bonded to the secondary neutral stud. The transformer secondary shall be grounded to conform to NEC Code Section 250-26.

e. Ground conductors shall be Type THW, green colored, and of size as indicated on drawings.

f. Contractor shall make no ground connections except as required by the National Electrical Code or as specified or shown on the drawings.

g. Ground grids and counterpoises shall be installed as indicated. Ground rods shall be driven to a depth equal to the length of the rod plus 18 inches. All below grade connections to the grounding system shall be made with exothermic welds or Thomas & Betts compression ground grid fittings.

h. The resistance to earth of each system grounding shall be measured with a null balance earth tester. The results of each test shall be recorded and certified and submitted to the Engineer. Tests shall be conducted during dry weather or a minimum of two days after rain has fallen on the ground to be tested.

16A.11 NAMEPLATES:

a. Each circuit breaker, panelboard, disconnect switch, motor starter, motor overload switch, or other devices shall have an identifying nameplate affixed, such as "PANEL PA", "FAN S-2 STARTER". Nameplates shall be laminated plastic, white engraved letters on black background. Letters shall normally be 1/4 inch high. Embossed taped strips are not acceptable.

16A.12 IDENTIFICATION OF ELECTRICAL CONDUIT AND CABLES:

a. All exposed conduit shall be identified as to system voltage at intervals of 20'-0" or fraction thereof. Identification shall be made with selfsticking labels, orange background with black numerals and letters. Labels shall be (2-1/4" x 9") on conduits 2-1/2" and larger and (1-1/8" x 4-1/2") on conduits 2" and smaller, as manufactured by W.H. Brady Company, National Bank and Tag Company, Thomas & Betts, or Seaton Nameplate Corporation.

b. Cables exposed in pullboxes shall be identified with 1-1/4" wide x 2-1/2" long laminated plastic tags (white core red) engraved in 1/4" high letters and numerals to designate system voltage and feeder number.

16A.13 SALVAGE:

a. Reusable items of electrical equipment, including transformers (except transformers now installed on pole #1 and pole #12), motor starter for R.W. pump No. 3, panelboards, switches, and other items selected by the Owner, shall remain the property of the Owner and shall be stored on the Owner's property as directed by the Engineer.

b. Other items of electrical equipment and materials specified to be removed such as conduits, conductors, lighting fixtures, motor starters, etc., shall become the property of the

Contractor and shall be removed from the project site. Items specified to be removed shall not be reused on the project.

16A.14 INSTRUCTION MANUALS:

a. Before equipment is placed in service, six sets of clean and unused instruction manuals shall be delivered by the Contractor to the Owner. Instruction manuals shall list all of the equipment specified in this and other referenced data; and shall show operating instructions; maintenance instructions; wiring, and control diagrams; and assembly drawings showing locations of parts, part numbers, and spare parts list. Part numbers shall be the actual part numbers of the particular item of equipment installed.

16A.15 RECORD DRAWINGS:

a. Upon completion of the work, the Contractor shall submit a clean set of blue-line white prints marked in red pencil to indicate all deviations from the plans and specifications.

b. A record of deviations shall be kept throughout the progress of the job and shall be used in the preparation of the "record" drawings.

c. The "record" drawings shall indicate all corrections and changes to, or deviations from, the contract drawings made by the Contractor.

16A.16 SPACE LIMITATIONS:

a. Available space for the installation of equipment and devices is indicated on the drawings. Equipment or devices which will not fit into the allocated space will not be accepted.

16A.17 AIR SPACE:

a. A minimum of 1 inch of air space shall be provided between the metal enclosures of electrical equipment, devices, or fixtures, and masonry or concrete walls and ceilings.

16A.18 POWDER ACTUATED ANCHORS:

a. Powder actuated devices for support or anchoring equipment, conduits, or other items will not be permitted.

DIVISION 16
ELECTRICAL
SECTION 16B
SERVICE AND OVERCURRENT PROTECTIVE EQUIPMENT

16B.01 SERVICE SWITCHBOARD:

a. The service switchboard shall be free standing, front access and front connected, with group mounted devices. Switchboard shall be rated for service entrance use for a 120/208 volt, 3 phase, 60 Hz., 4 wire service.

b. Switchboard shall be 90 inches high. Other dimensions are shown on the drawings. The dimensions of sections and structure shall be not less than the minimum nor more than the maximum dimensions shown on the drawings. The switchboard shall be installed on a 4" high concrete pad which extends 2 inches on all sides of the assembly.

c. The bus shall be electrical grade copper with full silver plating at bolted connections. Bus shall be braced for 25,000 RMS amperes. A 1/4" x 2" copper ground bus, with removable inter-connection link to the neutral bus, shall extend the full length of the assembly. Lugs shall be as specified under "WIRING".

d. Breakers shall be thermo-magnetic molded-case. Breakers shall be rated 600 Volts with minimum interrupting capacity of 18,000 RMS amperes at 240 volts.

e. Molded case circuit breakers shall be in accordance with NEMA Pub. No. AB 1-1975-Rev. 3.

f. The switchboard assembly shall have a light gray, rust inhibiting, corrosion and scratch resistant finish.

g. Engraved nameplates, as specified under "NAMEPLATES", identifying the circuit usage and location of the load shall be provided for each breaker.

h. The switchboard assembly shall be constructed and tested in accordance with U.L. Standard UL-891, A.N.S.I. Pub. C37.20-1969 and NEMA Pub. PB-2-1972.

i. Service switchboard shall be manufactured by Crouse-Hinds, G.E., Square D, or Westinghouse.

16B.02 POWER AND DISTRIBUTION PANELS:

a. Power and distribution panels shall be of dead-front panelboard construction. Boxes shall be formed from one piece of Code gauge galvanized steel. End pieces shall be seam welded to the back and sides. Boxes shall be furnished without knockouts. Doors shall be provided with an over-sized directory which

clearly indicates the use of the circuit. Doors shall have piano type hinges and flush catch and lock.

b. Bus shall be copper bus bars of 98% conductivity, silver plated at all joints and connection points. Lugs shall be copper or copper alloy for copper conductors only.

c. An insulated, groundable, neutral bar shall be provided in each panel.

d. A ground bus, with lugs for each breaker, shall be bolted to the box.

e. Top and bottom gutters shall be not less than 10 inches wide. Side gutters shall be not less than 8 inches wide at the narrowest point.

f. Panelboards shall be of the dead front convertible distribution panel type.

g. Overcurrent devices shall be molded case, thermal-magnetic, circuit breakers with trip ratings and number of poles as shown on the drawings. Interrupting capacity shall be not less than indicated by frame sizes or RMS symmetrical ratings shown on the drawings.

h. Breakers rated over 150 amperes shall have interchangeable trips.

i. Breakers shall be interchangeable at any location in the panel. Single pole and two pole breakers with pre-determined fixed phase connections are not acceptable.

j. Panelboards shall be constructed in accordance with UL-67-August 1974 and NEMA PB-1, 1975.

k. Panelboards shall be manufactured by Crouse-Hinds, General Electric, Square D, or Westinghouse.

16B.03 LIGHTING PANELS:

a. Lighting panels shall be formed from one piece of code gauge galvanized steel. End pieces shall be welded to the back and sides. Boxes shall be furnished without knockouts. Doors shall be provided with an oversized directory which clearly indicates the use of the circuit. Flush mounted panels shall have doors with concealed hinges, flush catch and lock. Surface mounted panels shall have doors with piano type hinges and flush catch and lock.

b. Gutter space shall be not less than 4 inches on all sides except that cabinets enclosing a through feeder shall have an eight inch gutter on the feeder side. Cabinets shall be not less than 20 inches wide, except where smaller panels are indicated.

c. All buswork shall be of copper of 98% conductivity silver plated at all joints and connection points. Lugs shall be copper or copper alloy for copper conductors only.

d. Overcurrent devices shall be molded case, thermal-magnetic, circuit breakers with trip ratings and number of poles as shown on the drawings. Interrupting capacity shall be not less than indicated by frame sizes or RMS symmetrical ratings shown on the drawings.

e. Breakers shall be interchangeable at any location in the panel. Single pole and two pole breakers with pre-determined, fixed phase connections are not acceptable.

f. Panelboards shall be constructed in accordance with UL-67 - August 1974 and NEMA PB-1, 1975.

g. Panelboards shall be manufactured by Crouse-Hinds, G.E., Square D, or Westinghouse.

16B.04 MOTOR CONTROL:

a. Furnish and install all motor control devices, excluding devices designed for low-voltage operations, except for those devices specified to be furnished as a component with the equipment to be controlled.

b. Motor control devices specified to be furnished in other sections of the Specifications shall be installed and electrically connected and tested.

c. Motor control devices are to include motor starters, contactors, relays, thermal overload switches, pilot lights, push-button stations, selector switches, safety switches, and disconnect switches.

d. Other control devices such as thermostats, fire stats, pressure switches, float switches, electrically controlled valves, low voltage controls, and special control panels specified to be furnished in other sections of the specifications shall be installed and electrically connected and tested.

e. All motor starters, contactors, and control panels shall be furnished with an integral circuit breaker installed on the line side of the control device. Frame size and trip rating of the breaker shall be as indicated on the drawings. An external operating handle capable of being locked only in the "OFF" or "OPEN" position shall be provided. Unit covers shall be interlocked with the circuit breaker operating handle to preclude opening of the cover door when breaker is closed. The interlock shall be provided with a defeater device.

f. All motor control devices, unless otherwise specified, shall be provided with individual control power transformers for operation of holding coils and associated controls devices. It is the intent and requirements of these Specifications that no motor control voltage be higher than 120 volts. Controls power transformers shall be of capacities for loads served. Each transformer shall be fused on the secondary side with readily accessible fuses.

g. Unless otherwise scheduled or indicated, motor control (starter) unit shall be general purpose magnetic units, full voltage, non-reversing, with three relays (heaters), one in each phase of the motor branch circuit. Minimum size of starters shall be NEMA Size 1.

h. Each starter unit shall be provided with at least three sets of auxiliary control contacts, with provision for adding additional contacts.

i. Each starter unit shall be provided with an H-O-A selector switch mounted in front of unit, unless otherwise scheduled.

j. Each starter unit shall be provided with a red push-to-test pilot light mounted in front of unit. This light shall be on when starter is in closed (running) position.

k. All pushbuttons, selector switches, and pilot lights installed in the covers of control devices shall be oil-tight.

l. All remote mounted push buttons selector switches, and pilot-lights shall be of the heavy duty oil-tight type. Pilot lights shall be push-to-test transformer type.

m. Enclosure for motor starters, contactors, and relays shall be as follows:

(1) Indoors in Control Building - NEMA - 1A

(2) Indoors in other areas - NEMA 12

(3) Outdoors - NEMA - 4X and NEMA - 4SS

n. Overload devices (heaters) shall be field installed and properly sized from actual motor nameplate data.

o. Motor Control Devices shall be in accordance with U.L. Standard U.L. 508, May - 1977 and A.N.S.I. Standard C33.76-1971.

p. Motor control devices shall be manufactured by Allen-Bradley, Cutler-Hammer, Clark Controller, Furnas, G.E., Square D, or Westinghouse.

16B.05 MOTOR CONTROL CENTERS:

a. Motor control centers shall be NEMA Class 1, Type B. They shall be free standing units, nominal 90" high, with sections 20" wide and deep. Each control unit shall be mounted in an enclosed compartment, electrically isolated, with separate interlocked door.

b. The vertical sections shall be standardized and bolted together to form a single factory assembled free standing metal enclosed structure with all control units mounted and wired. All access shall be from the front, with removable plates provided on the rear. Each motor control center shall have an engraved nameplate mounted above the left hand vertical section showing in 1" white letters on a black background the design designation, such as "MCC-2A1".

c. Top and bottom horizontal wire ways, and full height vertical wire shall be provided. Hinged doors shall be provided on vertical wire ways. Barriers and baffles shall isolate wire ways from busses.

d. Bussing shall be copper, with all current carrying joints and contacts silver plated. All lugs shall be copper alloy for copper conductors only.

e. Horizontal bus shall be of capacity shown on the drawings. Vertical bus shall be not less than 300 amps. Bus shall be supported to withstand a fault current of 22,000 amps at 480 volts. Bus bars shall be insulated from starter compartments. Connection of starter stabs to the bus bars shall be through slots in the insulating barrier.

f. All breakers for either starters, feeders or main disconnect shall be manually operated with door closed, position indicating (ON-OFF-TRIPPED), trip free and permit padlocking. Unless otherwise specified shall be molded case, thermal overload, adjustable magnetic overcurrent, with interchangeable trip units above 150 ampere frame. They shall be enclosure compensated for an external ambient of 40°C. Interrupting capacities of the breakers shall be in accordance with frame sizes shown in the schedules.

g. Motor control (starter) devices shall be as specified under subject of Motor Control. Motor control shall be plug-in design.

h. Oil tight selector switches, pushbuttons, and pilot lights shall be mounted in the door. Terminal blocks shall be of the break away construction.

i. Ammeters and voltmeters shall be provided in front of control center as indicated by symbols on Drawings. They shall be of the flush indicating switchboard type, 250° scale, calibrated,

1% accuracy, single phase, with selector switch below each meter.

j. Ammeter switches shall be four position (A, B, C, OFF); voltmeter switches shall be four position (A-B, B-C, C-A, OFF). Furnish and install current and potential transformers for proper operation of the meters.

k. An equipment ground bus, of 1/4" x 1" copper, shall run the full length of units, and shall be bonded to each section.

l. The control center shall be mounted on steel channels or I beams as indicated.

m. Motor control centers shall comply with UL-845, Rev. 1977.

n. Motor control centers shall be manufactured by Allen Bradley, G.E., Furnas, Seimens-Allis, or Westinghouse.

16B.06 MEDIUM VOLTAGE MOTOR CONTROL ASSEMBLY:

a. The medium voltage motor control assembly for the Control Building shall be a free standing, metalclad draw-out, front connected motor control assembly. Arrangement shall be as indicated. Overall dimensions of the assembly shall not exceed the dimensions indicated.

b. Controllers shall be NEMA Class E-2 with current limiting fuses. Interrupting capacity shall be 250 MVA at 4160V. Contactors shall be rated 5000V with an interrupting capacity of 50 MVA symmetrical.

c. Contactors shall be rated not less than 400A. The main contactor shall be electrically operated, mechanically latched.

d. Each controller shall have a 2400: 120/240V control power transformer protected by current limiting fuses. Transformer shall have sufficient capacity for operation of all devices connected to the transformer. Control voltage to all remote devices shall not exceed 120 volts to ground. Control voltage for contactor operating coils shall be 230V. Auxiliary contacts shall be provided for control of remote devices.

e. A control circuit test switch shall be provided for testing of controls from an external source of power. The external test circuit shall be permanently wired to control test switch.

f. Enclosures shall be NEMA Type 1 with high and low voltage compartments separated from each other by steel barriers. All compartments shall have hinged doors on the front.

g. An externally operating handle shall be provided to disconnect and connect the line contactor from the bus. The door to the high voltage compartment shall be interlocked to prevent the opening of the door unless the contactor is in the disconnected position. Automatic shutters shall cover the line terminals when the contactor is disconnected.

h. The low voltage compartment of each controller shall contain the ON-OFF switch, control test switch, undervoltage reset, ammeter and selector switch, elapsed time meter, and red pilot light. The motor protective devices, ammeter, ammeter selector switch, start-stop pushbuttons, pilot lights, and master terminal blocks for connection of remote controls, shall be installed in the control section.

i. Ammeter selector switch shall be four position, A-B, B-C, C-A, OFF. Meters shall be flush mounted, 4-1/2 inches square, 250° scale, 1% accuracy class, single phase, with dials calibrated in amperes. Current transformers shall be provided for operation of meters.

j. Motor protective devices shall be provided to protect the motors from overcurrent, open phase, and phase reversal. Protective devices shall be current sensitive, field adjustable. Pilot lights shall be provided to indicate the cause of tripping.

k. A time delay undervoltage relay with pilot light and reset button shall be provided to prevent the motor from starting under low voltage conditions.

l. Protective relays for the main contactor shall be induction disc, current sensitive, over current relays. Very inverse, GE Type 1FC-53; or Westinghouse Type CO-9H. Device 50/51 shall have a time delay range of 1.5 to 12A, instantaneous range - 6 to 50A. Device 50/51 N shall have a time delay range of 0.5 to 4A, instantaneous range of 2 to 48A.

m. Power factor correction capacitors, as specified in "Power Factor Correction Capacitors" shall be provided for each motor. KVAR capacity and method of connection shall be as indicated. Surge protection arrestors and capacitor shall be provided for the main contactor as indicated.

n. The main contactor section shall contain meters, pilot lights, and selector switches as indicated.

o. Finish shall be the manufacturer's standard coating, subject to review and approval by the Engineer.

p. Approved manufacturers of the 2.4 KV motor control assembly are Electric Machinery, G.E., Seimens-Allis, or Westinghouse.

16B.07 POWER FACTOR CORRECTION CAPACITORS:

a. Power factor correction capacitors shall be of the industrial dustproof type designed to fit NEMA standard hangers. Capacitors shall be 3 phase, with voltage and KVAR rating as indicated. Discharge resistors shall be provided as required by the National Electrical Codes for capacitors rated 25 KVAR or larger.

b. Capacitors shall be manufactured by Cornell-Dubilier, G.E., Sprague, or Westinghouse.

16B.08 SAFETY AND DISCONNECT SWITCHES:

a. Fusible safety switches and unfused disconnect switches shall be installed where indicated on the drawings.

b. All fused and unfused switches shall be heavy duty. Disconnect switches for motor circuits shall be horsepower rated. Where indicated by the symbol "MSS" on the drawings, disconnect switches shall be an externally operated switch designed to circuit breaker specifications. For small loads up to 2 H.P. or other loads up to 20 Amps., a toggle type H.P. rated motor switch may be used.

c. Switches shall be manufactured by G.E., I.T.E., Square D, or Westinghouse.

16B.09 INDIVIDUAL CIRCUIT BREAKERS:

a. Individual circuit breakers shall be molded case thermal-magnetic circuit breaker of frame size and trip rating as shown on the drawings. Breakers shall be provided with an external operating mechanism mounted independent of the breaker. Enclosures shall be NEMA 12 for indoor use and NEMA 4SS for exterior use.

16B.10 DRY TYPE TRANSFORMERS:

a. Dry type transformers shall be of KVA capacity as indicated on the drawings.

b. Transformers rated 15 KVA - 3 phase and below, shall be totally enclosed, non-ventilated, encapsulated, dust proof. Insulation system shall be Class 185°C, 115°C rise over a 40°C ambient. Transformers shall have 2 - 5% FCBN and 2 - 5% FCAN taps. Transformers shall be connected 480 volt delta primary and 120/208 volt wye secondary.

c. A section of liquid-tight flexible conduit shall be installed between the transformer and the conduit system. A vibration damper of neoprene construction shall be installed between the building structure and the transformer mounting supports.

d. Transformers shall be manufactured and tested in accordance with UL Standard UL 506, July 1977 NEMA Standard ST 20-1972, and ANSI - C89.2 - 1974.

e. Approved manufacturers are: G.E., Hevi-Duty, Magnetics, Sorgel, and Westinghouse.

16B.11 PAD MOUNTED TRANSFORMERS:

a. Pad mounted transformers shall be outdoor, 3 phase, oil filled, self cooled, 60 Hz., 65°C rise, of KVA capacity as indicated. Rating shall be 2400 volt Delta primary, 120/208 volt grounded wye secondary.

b. Voltage impedance shall be a maximum of 5.75%, plus or minus 7-1/2%, with a minimum of 3.8%.

c. The transformer shall have separate compartments for the primary and secondary sections. The compartments shall be separated by a steel barrier. Each compartment shall have removable hinged doors and removable door sills. The high voltage compartment shall be accessible only after the door to the low voltage compartment has been opened. Doors shall be locked by use of a 3 point padlocking handle.

d. The transformer shall be protected against overload by use of C rated, current limiting fuses located in the high voltage compartment.

e. Transformers shall have two 2-1/2 FCBN and two 2-1/2% FCAN taps with an externally operated deenergized tap changer located in the low voltage compartment.

f. The secondary neutral shall be brought out through a bushing. Secondary terminals shall be tinned spade type.

g. Transformers shall be equipped with the following accessories:

(1) Oil temperature indicator
(2) Magnetic liquid level indicator
(3) Pressure relief valve
(4) Pressure test connection
(5) Pressure vacuum gauge
(6) Combination drain and filter valve and sampling device
(7) 1 inch filling plug
(8) 1 inch filter press connection
(9) Top sampling device
(10) Ground pad
(11) Undercoating

h. Transformers shall meet the requirements of ANSI C57.12.22 and C57.12.00-1973.

c. The enclosure shall be NEMA 1. Conduit entry shall be from the top only. Space shall be provided inside of the enclosure for the passage of the load conductors and for the installation of stress cones. The depth of the enclosure shall not exceed 15 inches, width shall not exceed 24 inches.

d. The switch shall be Kearney "Isolator".

16B.15 5 KV POTHEADS:

a. Individually mounted potheads shall be 5000V, 3 conductor, Shape B, with grounding lugs, conduit couplings, and flanged stuffing boxes. Potheads shall be capnut type with adjustable aerial lugs.

b. Potheads shall be manufactured by G&W, PLM-Rusgreen, or equal.

DIVISION 16
ELECTRICAL
SECTION 16C
RACEWAYS

16C.01 CONDUITS:

a. The conduit installation shall follow the layout shown on the drawings. Where deviations are required due to field conditions, or changes in arrangement of equipment or apparatus, such changes shall be made without additional costs to the Owner.

b. Rigid galvanized steel conduit shall be used for all systems and locations except as specified for Electrical Metallic Tubing (EMT).

c. Electrical Metallic Tubing may be used only for concealed branch circuits, signal circuits, and communication circuits in office areas only.

d. Minimum size of raceway shall be 3/4". Conduits shall be sized in accordance with NEC Chapter 9, Table 3C and Table 5, Col. 3.

e. Exposed raceways shall be run parallel with or at right angles to the building walls. Raceways shall be supported at intervals not exceeding 8 feet and within 3 feet of each outlet box, junction box, cabinet, or fitting.

f. Individual raceways mounted close to surfaces shall be supported with galvanized two-hole pipe straps, 1/8 inch thick, beam clamps, or electro-galvanized conduit hangers installed on beam clamps. Pendant mounted individual raceways shall be supported with 1/8" steel conduit hangers with removable side bolt.

g. Where two or more raceways are installed adjacent they shall be installed on electro-galvanized continuous slot channel with electrogalvanized pipe straps. Openings and ends of channels shall be closed with closure strip to prevent the accumulation of dust.

h. Suspension rods shall be not less than 3/8" for conduit sizes 2" to 3" and not less than 1/2" for sizes over 3". Where length of rod exceeds 3 feet, a swivel hanger shall be used at the point of attachment to the structure.

i. All conduit fittings shall be zinc coated, cast ferrous, with threaded conduit entrances. Mogul sizes shall be used for condulets 2-1/2" or larger. LB, LR, LL, or T condulets shall not be used for wire sizes #4AWG or larger.

j. Insulated bushings with separate locknuts, or connectors with insulated throats, shall be installed on all conduits and tubing entering cabinets, outlet boxes and pullboxes.

k. Connectors and couplings for electrical metallic tubing shall be compression type, UL approved as concrete and raintight. Bodies and nuts shall be constructed of machined steel zinc plated inside and out. Connectors shall have insulated throats.

l. Flexible Conduit: Conduits shall be liquid tight flexible steel conduit with internal bonding conductor, with fittings designed to insure ground continuity.

m. Conduits installed in earth or underground shall be rigid galvanized steel. Rigid conduits shall be encased in reinforced concrete with a minimum separation of 1-1/2" between conduits and a minimum cover of 3" on top, bottom, and sides.

n. Junction boxes or pull boxes shall be installed to avoid excessive runs or bends. Boxes shall be seam welded galvanized sheet steel with code gauge gasketed covers, except where cast ferrous boxes are required. Boxes shall be furnished without knockouts. Boxes used on or near equipment shall be JIC design. Boxes shall be sized in accordance with NEC 37018 depth shall be not less than 2-1/2 times the trade diameter of the conduit.

o. Rigid conduit shall comply with the requirements of A.N.S.I. Standard C80.1 and U.L. Standard UL6.

p. Electrical metallic tubing shall comply with the requirements of American National Standard C80.3 and U.L. Standard UL797.

16C.02 TERMINAL BOXES:

a. Terminal boxes shall be installed where shown on the drawings and where splices and taps are required in control conductors. Terminal boxes shall be of NEMA 12 construction and provided with terminal blocks with terminals for each conductor in the enclosure. All terminals shall be numbered and each conductor shall be identified.

16C.03 OUTLET BOXES:

a. An outlet box shall be provided for each lighting fixture, device, outlet, telephone outlet, signal outlet or junction box indicated on the drawing. Boxes shall be of form and dimension as to be adapted to its specific use and location, device or fixture to be mounted in or on box, and number, size and arrangement of conduits connecting thereto.

b. Outlet boxes suface mounted on walls or columns shall be of cast ferrous construction.

16C.04 LOCATION OF OUTLETS:

a. The approximate locations of outlets are shown on the drawings. The exact locations shall be determined at the building. The right is reserved to change the exact location of any switch, ceiling or other outlet in any room before it is permanently installed without additional cost to the Owner.

b. Where outlets at different levels are shown adjacent, they shall be installed in one vertical line.

DIVISION 16
ELECTRICAL
SECTION 16D
ELECTRICAL CONDUCTORS

16D.01 WIRING:

a. Complete sytems of wiring shall be installed as shown on the Drawings or as specified. Each raceway indicated by symbol on Drawings shall contain two wires unless otherwise noted, scheduled or indicated. Hatch marks on raceway symbols indicate the number of conductors in a raceway when the number exceeds two.

b. Conductors for all lighting and 120/208V branch circuits shall be 600V, NEC, Type THW, 75°C wet or dry locations, solid copper conductors, manufactured in accordance with IPCEA Pub. S-61-402 (Second Edition).

c. Conductors for all power feeders, motor circuits, and 480V circuits shall be copper and shall have 600V insulation, N.E.C. Type USE-RHH-RHW, manufactured in accordance with IPCEA Pub. No. S-66-524 and NEMA Pub. WC7-1971 Rev. Jan. 1978. Insulation shall be rated 90° for dry locations and 75° for wet locations. Minimum insulation shall be: .047" for sizes up to No. 8, .062" for sizes Nos. 8 to 1, .078" for sizes Nos. 1 to 250 MCM, .094 for sizes larger than 250 MCM.

d. Control conductors shall be stranded copper single conductor or multiple conductor cables as indicated. Single control conductors shall be #14 AWG, Type MTW.

e. Multiple conductor control cables shall have 600 volt insulation manufactured in accordance with IPCEA Pub. No. S-66-524 and NEMA WC-7-1971 Rev.-1978) installed over the individual conductors and a binder tape and a PVC outer jacket installed over the conductors. All individual conductors shall be color coded in accordance with IPCEA Standard S-61-402, Method 1. Insulation thickness shall be 30 mils for individual conductors and 60 mils for the outer jacket.

f. Conduit sizes given on the plans for control cables are based upon specified cable O.D. Extra costs for larger conduit size required by other cables will be borne by the Contractor. Where control cables are over 100 feet long and voltage drop may become excessive for certain control circuits then two conductors may be connected in parallel to improve circuit characteristics.

g. Minimum size of conductors for all systems other than Control and Signaling Systems shall be No. 12 AWG. Sizes Nos. 8 and larger shall be stranded.

h. Control conductors shall be identified at every termination. The color-coding in multiple conductor cables constitutes the required identification. Individual conductors shall have a permanent numbered identification tag. All control conductors shall terminate on the device terminals or terminal blocks. Splices or taps in control conductors are not acceptable.

i. Splices, taps, and terminations shall be made as follows:

(1) All lugs, connectors, and terminators for wire sizes # 6 AWG and above shall be U.L. approved for copper conductors only.

(2) Lugs for wire sizes No. 6 AWG and larger, when used in conjunction with panelboards, molded case breakers, or disconnect switches, shall be a mechanical type connector. Lugs shall contain a saddle to exert pressure on the conductor by the set screw or bolt. Wire size range of lugs shall not exceed three AWG sizes.

(3) Lugs for wire sizes No. 6 AWG and larger, except as hereinbefore specified, and all in-line and "T" splices, shall be the compression indentor type.

(4) Wire Sizes No. 8 and smaller with insulated steel spring wire connectors.

(5) Terminators for control conductors shall be self-insulated locking spade terminals.

(6) Joints shall be covered with 7 mil vinyl plastic electrical tape on branch circuit wiring connections, and 10 mil vinyl plastic electrical tape on mechancial and indent connectors on larger cables.

j. The continuity of an identified grounded conductor shall not be dependent upon device connections, such as lamp-holders or receptacles, where the removal of such devices would interrupt the continuity.

k. Branch circuit designations shown on the drawings shall be connected to the same circuit number in the panelboard.

l. All wire shall be color coded to indicate the various phases and neutral. Color coding for the various systems shall be as follows:

For 120/208 Volt System	For 277/480 Volt System
Phase A - Black	Phase A - Brown
Phase B - Red	Phase B - Orange
Phase C - Blue	Phase C - Yellow
Neutral - White	Neutral - White
Ground - Green	Ground - Green

m. All 600 volt wire and cable shall be of same manufacturer.

n. Wire and cable shall be manufactured by Anaconda, Collyer, G.E., General Cable, Okonite, Phelps-Dodge, or Rome.

16D.02 2400V CONDUCTORS:

a. Conductors shall be single conductor, of size indicated, soft drawn copper of 98% conductivity, Class B concentric stranding, with a semi-conductive shielding applied over the bare conductor. Insulation shall be Cross-linked-thermosetting-polyethylene rated at 5000V. Insulation shall be in accordance with I.P.C.E.A. Pub. No. S-66-524, Nema, Pub. No. WC7-1971. A semi-conducting tape and a copper shielding media shall be applied over the insulation. A PVC outer jacket shall be installed over the shielding conductors.

b. Conductors between motor controllers and existing motors and between controllers and power factor correction capacitors shall be non-shielded conductors conforming to NEC 310-61.

c. Individual cables shall be terminated with built-up stress cones. The copper conductors shall terminate in a long shank compression lug. Outdoor stress cones shall be weather proofed with 3M Scotch 70 silicone rubber tape. The tape shall completely cover the stress cone and the lug shank. The grounding shield shall be grounded at both ends.

d. All cables shall be factory tested in accordance with all applicable tests of I.P.C.E.A. Standards. These tests shall include high voltage dielectric tests, both A-C and D-C, conductor resistance measurements, insulation resistance and corona level. Certified test reports shall be supplied to the engineer before the cable is installed.

e. After the cable has been installed, spliced and terminated, a D.C. test at 80% of factory test voltage shall be applied with all equipment disconnected. Test voltage shall be applied between phase conductor and grounded metal shielding for a period of 10 minutes. D.C. Micro-ampere readings shall be taken at 1 minute intervals during the test, and when plotted shall show a steady decrease in current.

f. The field test shall be performed by a registered engineer who is regularly engaged in the testing of electrical conductors and equipment.

g. The 5000V cable shall be manufactured by Anaconda, General Cable, G.E., Okonite, or Phelps-Dodge.

DIVISION 16
ELECTRICAL
SECTION 16E
WIRING DEVICES

16E.01 WALL SWITCHES:

a. Wall switches shall be furnished and installed where shown on the Drawings.

b. Wall switches shall be specification grade rated 20 amps., 120-277V.

(1) Single pole toggle switches shall be Arrow Hart #1991, G.E. #GE5951-1, Hubbell #1221, Sierra #5721X, or Slater #720BR.

(2) Three way toggle switches shall be Arrow Hart #1993, G.E. #GE5953-1, Hubbell #1223, Sierra #5773x, or Slater #723BR.

(3) Key operated switches shall be of the same capacity and quality as toggle switches, and of same manufacture.

(4) Switch and pilot shall be lighted button type, Arrow Hart #2999-R, G.E. #GE559-8, or Hubbell #1297.

16E.02 RECEPTACLES:

a. Receptacles for general use in Office areas shall be Intermediate Grade, 15 Amp., 125 volt, NEMA 5-15R, No. 5252.

b. Receptacles for general use in other areas shall be Specification Grade, 20 Amp., 125 volt, NEMA 5-20R, No. 5362.

c. Receptacles shall be of same manufacturer as specified for wall switches.

16E.03 DEVICE COVER PLATES:

a. Cover plates for flush wall outlets in finished spaces (switch, receptacle, telephone, signal) shall be satin finish stainless steel, Grade 302 (18% chrome, 8% nickel), specification grade as manufactured by Arrow-Hart, Hubbell, Slater or Sierra.

DIVISION 16
ELECTRICAL
SECTION 16F
LIGHTING

16F.01 LIGHTING FIXTURES:

a. Lighting fixtures shall be as scheduled on the drawings. Methods of installation, mounting heights, and special instructions are indicated on the drawings.

b. All pendant mounted fixtures shall have rigid stem pendants connected to swivel aligners at the point of support to the structure and to the conduit system.

c. Surface mounted fixtures with sheet metal housings shall be provided with 1-1/2" spacers provided by the fixture manufacturer to provide air space between the fixture and the structure.

d. All lighting fixtures shall be U.L. labeled and U.L. approved for its application.

16F.02 LAMPS:

a. Lamps shall be furnished and installed in all lighting fixtures. Lamps shall be of type, size, wattage, and color as scheduled on the drawings.

b. Incandescent lamps shall be rated for 125 volt operation except where other voltages are indicated by catalog number. Lamps designed for rough service will be designed by the suffix "RS" to the ANSI number. Lamps designed for extra long life (2500 hrs.) will be designated by the suffix "XL" to the ANSI number.

c. Mercury vapor, Metal-Halide, and HPS lamps shall be deluxe color corrected unless indicated otherwise.

d. Lamps shall be manufactured by G.E., Sylvania, or Westinghouse.

16F.03 BALLASTS:

a. Fluorescent lighting fixtures ballasts shall be high power factor, ETL and CBM approved, Class P.

b. Fluorescent lamp ballasts shall be thermally protected against over-heating by a built-in overheat protector sensitive to both winding temperatures and current. Ballasts shall not exceed 90° operating temperature in a 56°C heat box. Tests shall be conducted at a minimum of 15°C. over CBM and U/L testing procedures. Ballasts shall be guaranteed not to overheat capacitor insulating oil beyond manufacturer's warranty limits.

c. Ballasts for mercury vapor and metallic additive discharge lamps shall be HPF, UL approved, constant wattage or regulator type. Reactor type and "normal power factor" ballasts shall not be furnished. Ballasts shall be designed for applied voltage.

DIVISION 16
ELECTRICAL
SECTION 16G
CONTROL AND INSTRUMENTATION

16G.01 DESCRIPTION:

a. This Section of the Specifications covers the furnishing and installation of control and instrumentation equipment in the existing master control consoles in the Administration Building.

b. This Section shall comply with the GENERAL REQUIREMENTS of Section 16A.

16G.02 TERMINAL STRIPS:

a. All conductors entering the master control console shall be terminated on master terminal strips before connection is made to device terminals. Terminals for conductors which are energized from a remote source shall be switch screw terminals with wire clamp. All other terminals shall be screw terminals with wire clamps.

b. Control conductors shall be terminated and identified as specified in Section 16D.

16G.03 SYSTEM GROUND DETECTOR:

a. A ground detector to detect grounds on the 2.4 KV distribution system is specified to be furnished and installed in the switching station in Section 17B. A remote station, furnished under Section 17B, consisting of an alarm, fault light, acknowledge switch, and face plate shall be installed and connected in the control console.

16G.04 CONTROLS:

a. Push buttons and pilot lights for remote control of pump motors shall be provided and connected in the existing control consoles as indicated. Pilot lights shall be provided to indicate the status of the 2.4 KW breakers in the switching station.

16G.05 MISCELLANEOUS EQUIPMENT:

a. One voltmeter and selector switch and one powerfactor meter, furnished under Section 17B, shall be installed and connected in the master control console.

b. Surge suppressors for remote control conductors will be furnished under Section 17B. One suppressor shall be connected to each ungrounded conductor of the switching station remote control cable in the master control console.

16G.06 KW DEMAND CONTROLLER:

a. Provide one digital KW demand controller to limit the plant's peak electrical demand.

b. The controller shall operate on the Ideal Curve concept where pulses from the Utility's kilowatt-hour meter are compared to pulses generated within the controller as the basis for determining the actual demand total. The metering period shall be determined by end-of-interval pulses from the Utility's meter.

c. The controller shall have digital indication of the instantaneous KW demand. The register shall be capable of displaying a maximum instantaneous load of 4999 KW. The controller shall have ON-OFF control, visual alarm, alarm disable switch, and relay contacts for connection of an audible alarm.

d. The controller shall have relay output with ten control circuits. Each control circuit shall have a load status indicator and ON-AUTO-OFF override selector switch. The threshold at which each control circuit is energized or de-energized shall be independently adjustable. At the end of each demand interval, all loads that have been automatically turned off during the demand interval shall be re-energized. Each circuit shall be re-energized at selected intervals to prevent simultaneous restarting of loads. It shall also be possible, without removing the load from the automatic control of the controller, to restart any load during the demand interval when the total load has decreased to a predetermined value

e. The demand limit set points shall be field adjustable by use of digital thumbwheel switches. The add or shed steppoints of each control circuit shall be field programmed by jumper wires on the logic control card.

f. The controller shall operate on a 105V to 125V, 60 Hz., power supply in an ambient temperature range of 0°C to 50°C.

g. The Contractor shall arrange with the Georgia Power Company for the installation of the required pulse initiators and shall pay all costs involved. This cost shall be included in the Contractor's lump sum bid. The cost to the Contractor is estimated to be $700.00

h. The controller shall be Pacific Technology, Inc. Model 414 or Johnson Controls Series 1000-414.

DIVISION 17
EXTERIOR ELECTRICAL WORK
SECTION 17A
SWITCHING STATION

17A.01 SCOPE:

a. The Switching Station shall be furnished and installed complete and in operable condition. This shall include all steel foundations, footings, concrete pads, busses, insulators, wiring, devices and equipment together with all labor and services required to erect, install, service and adjust those materials, devices and equipment preparatory to placing the Switching Station in use.

b. This Section shall comply with the GENERAL requirements of Section 16A.

17A.02 FOOTINGS AND PADS:

a. Footings and pads shall be reinforced concrete as specified in the "Concrete Section of the Specifications.

b. Column footings shall extend a minimum of 36" below finished grade. Bottom of footings shall rest on firm, undisturbed earth.

c. Pads for equipment shall extend not less than 8" below grade. Height of pads shall be a minimum of 6" above grade and shall be of sufficient height so that no live terminals on the equipment supported by the pads is less than 8'-0" above grade. Pads shall extend 6" on all sides beyond the supported equipment.

17A.03 STRUCTURE:

a. Shall be fabricated of steel I beams, channels, and angles, hot-dipped galvanized after fabrication. Galvanized steel bolts, nuts and washers shall connect the parts. Posts and untrussed spans 12' and longer shall be I beams; spans supporting switches shall be trussed from channels and angles. Structure shall be designed for 1/4" ice loading and a wind load of 30 lb./sq. ft. Fabrication of the steel shall include bolt holes for mounting insulators and equipment.

17A.04 INSULATORS:

a. Insulators shall be sanded and glazed porcelain, with all ferrous parts hotdip galvanized to withstand 6 dips on all areas, except bolts and nuts 4 dips, of the standard Preece test. Insulators shall be rated 7.5 KV, 95 BIL. Post insulators shall be TR #202 Gray station post insulators.

17A.05 BUSSING:

a. Shall be round standard copper pipe, ASTM Designation B42-391, of nominal sizes noted on the Drawings. Purity shall be minimum 99.9% copper, silver being counted as copper. Pipe shall be cold-drawn to size, and shall be of hard-drawn temper. Buss connections, taps and supports shall be of the heavy duty clamp and bolt type. Each fitting shall be of pattern or type designed for its application: coupling, elbow, tee, cable tap, etc. Where bussing connects to studs or plates on oil circuit breakers, switches and voltage regulators, expansion stud connectors or expansion terminals shall be used.

17A.06 CABLING:

a. Wire and cable extensions to fixed equipment are indicated on Plans, Elevations and Sections. Such conductors shall be bare stranded copper of AWG sizes as noted on Drawings.

17A.07 FEEDER CIRCUIT BREAKERS:

a. Feeder circuit breakers shall be high-voltage oil circuit breakers rated at 15 KV, 1200 amperes continuous, 37,000 amperes momentary, 500 MVA, 110 KV BIL, 23,000 amperes (rms) interrupting capacity. Each breaker shall be provided with features and/or equipment as follows:

(1) Single tank, 3 pole, electrical and manual operation.

(2) Frame work, painted, with 14" extension.

(3) Bushings (6), standard creepage.

(4) Bushing current transformers (3), multi-ratio type, halfburden, set 600/5A, for overcurrent and ground relays and instruments. All shall be wired to terminal blocks and devices in Control House.

(5) Operating mechanism, spring operated, motor charged, electrically and mechanically trip-free. For 48 volt DC operation.

(6) Closing release coil.

(7) Shunt trip coil.

(8) Auxiliary switch, eleven stage.

(9) Latch checking switch.

(10) Operation counter.

(11) Control power protective and disconnect device.

(12) Heater.

(13) Oil gauge, float-type.

(14) Drain valve.

(15) Mechanism and maintenance closing device.

(16) Ground terminal connector.

(17) Weather-tight housing for mechanism.

(18) Control switch with red and green indicating lights.

(19) Terminal boards and control wiring.

(20) Oil fill to manufacturer's recommended level.

b. Feeder breakers shall be General Electric Type FKD, I.T.E. Type KS, Westinghouse Type GS, or Siemens-Allis Type SDO.

17A.08 VOLTAGE REGULATORS:

a. Voltage regulators shall be oil filled, self cooled, automatic, single phase, 32 step voltage regulators. Regulators shall be rated 2500 volts, 250 KVA, with a regulation of plus or minus 10%.

b. The regulators shall be suitable for use on a 2550V, 3 phase, 3 wire, ungrounded delta system.

c. Each regulator shall be complete with the following equipment:

(1) Fully automatic solid state, static control including:

Class I accuracy, + or - 1%. Band width 1.5-3 volts. Voltage level 105 - 135 volts. Line drop compensation with 0-24 volts adjustable resistance and 0-24 volts step adjusted reactance in 1 volt steps.

Polarity switch

Test rheostat

Band edge indications, amber lights

Operation counter

Drag hand reset

Time delay, adjustable, static timer, 10 - 90 seconds

Five position control switch

Neutral green light indication

Test terminals

Control power circuit breaker

Internal - external power supply

Double hinged, self-locking door with complete gasket seal.

(2) 10C oil in regulator.

(3) Main oil filled tank of sealed-type construction, with bolted on covers and nitrile gaskets.

(4) Tap changing mechanism.

(5) Ground pad.

(6) Pressure relief device.

(7) Diagrammatic nameplate.

(8) Dial type position indicator.

(9) Core and coil assembly.

(10) Thyrite bypass protection for series winding

(11) Current transformer

(12) Self contained potential and control power source

(13) Switching reactor

(14) Driving motor for switch mechanism.

d. A minimum of 2 days inspection and engineering service by a factory trained engineer shall be provided.

e. Voltage regulators shall be G. E. type ML-32, Mc-Graw Edison, Siemens-Allis type JFR, or Westinghouse.

17A.09 HOOKSTICK DISCONNECT SWITCHES:

a. Shall be rated 7.2 KV, 95 BIL, 1200 amperes continuous with a momentary rating of at least 60,000 amperes. Jaw contacts shall be self-wiping, multiple line under constant high pressure maintained by precompressed coil springs. Hinge

contacts shall be self-wiping, with constant pressure maintained by spring washers of the Belleville type. Blades shall be hard drawn bus copper. Blades shall be positively latched in the closed position.

b. Switches shall be Southern States Type PBO, Delta-Star Type B2-L or Kearney Type H.

17A.10 BY-PASS SWITCHES:

a. By-pass switches shall consist of two one pole hook switches mounted side by side on a common base with a third hook switch mounted on flat copper bus bars clamped between the jaw end hardware and insulator caps of the other two units.

b. By-pass switches shall be rated 7.2 KV, 95 BIL, 1200 amperes continuous.

c. By-pass switches shall be Southern States type PBO-R.

17A.11 GROUP OPERATED SWITCHES:

a. Group operated switches shall be three pole, single throw, side-break air switches rated 1200 amp, 7.2 KV, 95 BIL, with a minimum momentary rating of 60,000 amps. Moving contact surfaces shall have silver strips brazed to the blade. Stationary contacts shall be spring loaded to exert pressure against the moving contacts.

b. Group operated switches shall be provided with a remote operating mechanism located on the switching station column, Operating mechanism shall be complete with operator, insulating section, shafts, ground clamp, and auxiliary switch.

c. Switches shall be Southern States type 57-K, Delta-Star type PMB-90, or Siemans-Allis type SSB.

17A.12 LIGHTING ARRESTORS:

a. Lighting arrestors shall be Station type. Arrestors shall be valve type rated at 3 KV. with a minimum 60 H_z sparkover of 4.5 KV rms with a maximum front-of-wave impulse sparkover of 12 KV.

b. Arrestors shall be G. E. Tupe MGA, Westinghouse Type SV, or McGraw Edison type 'G'.

17A.13 STATION SERVICE TRANSFORMER:

a. Station service transformer shall be an oil filled, single phase, distribution transformer, rated 25 KVA, 2400 V primary, 120/240 V secondary. Transformer shall have two 2-1/2% FCBN and two 2-1/2% FCAN Taps.

b. Transformer shall be manufactured by G. E., Line Materials, McGraw Edison, or Westinghouse.

17A.14 POTENTIAL TRANSFORMERS:

a. Potential transformers shall be outdoor type. Voltage rating shall be 2400/4160 V primary, 120 volt secondary, 20:1 ratio. Primary terminals shall be clamp type connectors. Secondary leads shall be enclosed in a sealed weather proof compartment. Permanent markings shall be provided for secondary and primary polarity markers.

b. Transformers shall be suitable for metering service.

17A.15 CURRENT TRANSORMERS:

a. Current transformers shall be outdoor type, single ratio, single primary bushing construction. Ratings shall be 5000V, 60 BIL, 800/5 amp, ANSI metering accuracy 0.3 B2.0.

b. Transformers shall be designed for drop lead connection to overhead conductors.

17A.16 STATION LIGHTING:

a. Provide concrete foundation, floodlighting pole, floodlight, and weather proof switch.

b. Floodlight shall be same as existing floodlights used throughout the plant. Floodlight shall be McGraw Edison No. FL-1831-120V with a 150W - 55 volt arc - HP sodium vapor lamp. Pole shall be McGraw Edison No. PA1007-1.

17A.17 AUXILIARY EQUIPMENT:

a. The Contractor shall furnish the following auxiliary equipment.

(1) 16', two piece, fiberglass hookstick with Outdoor switch stick head.

(2) Aluminum weatherproof container for hookstick. Install on fence as indicated.

(3) One tank lifter for use with oil circuit breakers.

17A.18 FACTORY SERVICES:

a. The services of a factory trained Engineer shall be provided to check, test, calibrate, and adjust to proper operating condition, each circuit breaker, voltage regulator, metering equipment, and protective relays.

DIVISION 17
EXTERIOR ELECTRICAL WORK
SECTION 17B
CONTROL AND METERING

17B.01 SCOPE:

a. A complete control and metering system shall be provided as indicated.

b. This Section shall comply with the GENERAL requirements of Section 16A.

c. Duplicate terminal strips and wiring shall be provided for parallel operation of remote meters and devices.

d. The control and metering system shall be furnished by the manufacturer of the power circuit breakers.

17B.02 CONTROL HOUSE:

a. The control house shall be a weather proof, outdoor, metal structure designed for outdoor switchboard installations. The structure shall be a protected aisle assembly consisting of one power supply section, one metering and control section, and one section for future metering and controls.

b. The depth of the assembly shall be not less than 48 inches.

c. Controls and meters shall be mounted in dead-front panels in each section. Each section shall be provided with hinged, rolled edge, gasketed doors with locking handle front and rear. A walk-through aisle approximately 32" wide shall extend the width of the Control House on the dead-front side of the panels (except in power supply section). A solid metal partition shall separate power supply section from other sections.

d. The Control House assembly shall be treated with a rust-inhibiting phosphate primer and finished on outside with two coats of ASA-61 gray enamel. Roof shall be sloped, with eaves to carry rainwater clear of door panels. Roof panels shall be formed, fitted and gasketed to insure watertight integrity. Ventilating louvers shall be provided. Interior shall be finished with two coats of alkyd-base white enamel.

e. Each section shall be provided with two medium base lampholders, one on each side of panel. Lamp with 100 watt I.F. lamps. Control with three-way wall switches located at each end of aisle. Provide lights and one wall switch in power supply section. Provide three duplex convenience outlets in Control House - two in control and metering section at each end of

aisle, and one in power supply section. Connect lights and receptacles to station service panel. Wiring to lighting receptacle and power supply outlets shall be No. 12 AWG, 600 volt, "THW" insulated copper wire. Wiring shall be run in rigid galvanized steel conduits. Where raceways are exposed, cast ferrous alloy boxes shall be installed at light and receptacle locations. After installation, exposed conduits and boxes shall be "painted in" to match Control House interior finish.

17B.03 SERVICE PANEL:

a. The service panel shall be a single phase, 120/240 V, Type NLAB panel board as indicated.

17B.04 RELAY AND CONTROL POWER SUPPLY:

a. Relaying and control shall be operated from a 48 volt direct current battery plant located in Control House.

b. Batteries shall be of the lead-acid calcium grid type, Exide "Tytex" or C & D "Plastical. Cells shall be translucent plastic with visible electrolyte level. Capacity shall be at least 75 amperes for one minute, discharged down to 1.75 volts per cell.

c. A battery charger shall be furnished and installed as part of the power supply. It shall be fully automatic with high and low-rate charging through use of an inverse temperature-compensating transfer voltage relay especially designed for battery charging. Voltage regulation shall be provided. An ammeter shall be provided to indicate charging rate, and a voltmeter shall be provided to indicate state of battery charge.

d. The power supply shall be built into a cabinet, with batteries accessible for inspection and service and instruments and controls flush-mounted in cabinet front.

17B.05 CONTROL EQUIPMENT:

a. The following controls shall be provided for each power circuit breaker:

(1) Local-remote control transfer switch

(2) Open-Close - control switch

(3) Local red and green indicating lights wired to terminal strips for remote indication in Adm. Bldg.

(4) Two time/instantaneous over current relays, device No. 50/51, in phases A & C.

(5) One time/instantaneous over current relay device No. 50/51 N.

(6) Indicating ammeter, 4-1/2" sq, 250° scale, 0-600 Amp dial, 1% accuracy class.

(7) Ammeter selector switch, four position. (A-B, B-C, C-A, OFF)

(8) Terminal boards and wiring.

b. Protective relays shall be induction disc, current sensitive, overcurrent relays. Very inverse, GE Type 1FC-53; or Westinghouse type CO-9H. Device 50/51 shall have a time delay range of 1.5 to 12A, instantaneous range - 6 to 50A. Device 50/51 N shall have a time delay range of 0.5 to 4A, instantaneous range of 2 to 48A.

17B.06 GROUND DETECTOR:

a. The ground detector shall be of the audible-visual type and shall consist of an audible alarm, silence switch, flashing fault indicator light, fault phase indication, relays, and provisions for a remote station. Fault indicators shall consist of three 0-120V voltmeters.

b. The remote station to be installed in the Administration building shall consist of alarm, acknowledge switch, fault light, and face plate for flush mounting.

c. The ground detector shall be Erickson Electrical Equipment Co. No. MHVAP-120/FRS with accessories, or equal.

17B.07 METERING EQUIPMENT:

a. Metering equipment shall consist of the following:

(1) Voltmeter and selector switch installed in the Control House.

(2) Voltmeter and selector switch for installation in master control console in the Administration Building. Voltmeter shall be calibrated after installation to compensate for lines loss in remote conductors.

(3) Powerfactor meter and local remote switch installed in the Control House.

(4) Powerfactor meter for installation in master control console in the Administration Building.

(5) Terminal strips and wiring for connection to pulse signal in Georgia Power Company's Watthour demand meter and to demand register in Administration Bldg.

b. Voltmeter shall be 4-1/2" sq. 250° scale, 1% accuracy class. Full scale dial reading shall be 0-3000 Volts. Voltmeter selector switch shall be four position - (A-B, B-C, C-A, OFF).

c. Powerfactor meter shall be 4-1/2" square, 250° scale, 3 phase, 3 wire, 1% accuracy class, scale reading .5-1-.5. Local-remote selector switch shall have over-lapping make-before-break contacts.

d. All control and selector switches shall be similar to GE type SBM.

17B.08 SURGE PROTECTORS:

a. Each ungrounded conductor of the remote control cable shall be protected at both ends with surge protectors. The protectors shall be Reliable Electric Company No. 391 FSR four conductor fuseless protectors with No. 1304 GFS-3 gas tube surge arrestors.

17B.09 PILOT LIGHTS:

a. Provide four pilot lights to indicate the open-closed status of the group operated switches.

b. All pilot lights shall be transformer type, push to test.

17B.10 NAMEPLATES:

a. Provide engrave nameplates to identify all controls and devices. Nameplates shall be as specified in 16A.11.

DIVISION 17
EXTERIOR ELECTRICAL WORK
SECTION 17C
AERIAL CONSTRUCTION

17C.01 GENERAL:

a. This Section shall comply with the GENERAL requirements of Section 16A.

17C.02 PHASE ROTATION:

a. The existing phase relationship shall be maintained. All connections shall be carefully checked to assure that a phase-reversal will not occur at any point in the distribution system.

17C.03 CLEARING OF RIGHT-OF-WAY:

a. Tree limbs and branches in the immediate area of the aerial conductors shall be removed or trimmed to prevent their falling upon or otherwise interferring with the conductors. All limbs and branches within 10' horizontally of the conductors shall be removed.

b. All conductors, poles, guys, and messengers shall be freed of all vegetation.

17C.04 PRIVATE PROPERTY:

a. A portion of the aerial feeder from the raw water pumping station to the remote Sandy Creek pumping station will cross over private property. The Contractor shall coordinate construction in this area with the Owner and the owner of the property.

17C.05 NEW POLES:

a. Wood poles shall be creosoted Southern Pine of lengths and class as indicated. Poles shall be straight, and be free of bows, knots, and knot-holes. Poles shall be roofed and drilled. Poles shall be full length pressure treated with a preservative in accord with American Wood Preservers Association Standrd Specifiations C4. Poles shall be set to depth of not less than 6' 6". End poles shall be raked 12". Poles shall be tamped to 95% compaction.

17C.06 EXISTING POLES:

a. Each existing pole shall be checked for proper alignment. Where the lean or rake of the pole appears to be excessive, the pole shall be guyed, reset, or both, to correct the alignment.

17C.07 HARDWARE:

a. Line hardware shall be hot-dipped galvanized, made to I.E.E.E. specifications. Messenger cable shall be 3/8" dia., Class 'A', zinc-coated-extra galvanized as per ASTM 475-62T, 10M, Siemens-Martin. Messenger cable shall be dead-ended with thimble-eye bolts and feed-thru dead end clamps or preformed grips. Anchors shall be 8" expanding cone type, buried to a depth of 6'. Anchor rods shall be 3/4" x 7' thimble-eye.

b. Brackets for mounting of terminators, lightning arrestors, or fused cutouts, shall be Joslyn #G-27089, Oliver X1667, McGraw Edison #DC59B2, or equal. Steel crossarms shall be Joslyn #SK-83, Oliver #X1548, McGraw Edison #DC99-B1, or equal.

c. Lightning points and fittings shall be copper or copper alloy as manufactured by Thompson or equal.

17C.08 INSULATORS:

a. Horizontal clamp-top post insulators shall have malleable iron base with aluminum hardware. Insulators shall be rated 15KV and have a cantilever strength of 2,800 lbs.

b. Pin type insulators shall be ANSI Class 55-3.

c. Deadend insulators shall be ANSI Class 52-9, Clevis-Tongue, rated at 7.5KV.

17C.09 LIGHTNING ARRESTORS:

a. Lightning arrestors shall be valve type, rated 3,000 volts. Arrestors shall be distribution class and intermediate class as indicated.

b. Distribution class arrestors shall have a maximum impulse spark-over front-of-wave crest level of 12.5KV. The 60 HZ spark-over level shall be a minimum of 5KV and a maximum of 9KV. Distribution Class arrestors shall be manufactured by G.E., McGraw Edison, Line Materials, or Westinghouse.

c. Intermediate class arrestors shall have a maximum impulse spark-over front-of-wave crest level of 12 KV. Maximum 100% impulse spark-over shall not exceed 11 KV. Arrestors shall be G.E. "Alugard" or Westinghouse Type IVL.

17C.10 CONDUCTORS:

a. Conductors shall be of size and type indicated.

b. All connections, splices, or taps, to aluminum or ACSR conductors shall be made with high compression type fittings, except where mechanical types are indicated. Fittings shall

be installed in accordance with the manufacturers instructions and recommendations.

c. All connections, splices, or taps to copper conductors shall be of the high compression type, or two bolt or four bolt bronze mechanical connectors. "Split-bolt" connectors shall not be used on any current carrying or normally energized conductor.

d. Multiple conductor control cables shall be suitable for installation in conduits below ground and for aerial installation on messenger cables. Cable shall be rated 600 volts, 90°C. Conductor shall be No. 14 AWG Class B stranded bare copper wire. Insulation over individual conductors shall be a minimum of 30 mils cross linked polyethylene. Conductors shall be bound together with a binder tape and have an outer PVC or neoprene jacket of 60 mils thickness for 16 conductors and below and 80 mils thickness for 17 conductors and above. Individual conductors shall be color coded in accordance with IPCEA Standard S-61-402, Method 1.

e. Multiple conductor cables installed on messengers shall be secured to the messenger cables with spiral wrapped coated copper binding strip.

f. Control cables installed outdoors on poles or messenger cables shall be protected at both ends by Reliable Electric Company No. 1304 GFS-3 gas tube surge arrestors installed in No. 391 FSR binding posts.

17C.11 GROUNDING:

a. All non-current carrying metallic objects, including insulator pins, down guys, and messenger cables shall be grounded. A minimum of two ground rods shall be installed at each pole for grounding of the non-current carrying metallic items.

b. A bonding jumper shall be installed around existing strain insulators in existing down guys. A bonding jumper shall not be installed around insulators in existing span guys or existing guys to buildings or structures.

c. Static wires and lightning points shall be installed where indicated. Static wires shall be 3/8" seven strand messenger cable. Lightning points shall be 1/2" diameter by 36" long copper rods with suitable supports.

d. Ground rods shall be 5/8" x 8' copperclad ground rods. Ground conductors shall be No. 4 AWG stranded copper wire. Provide ground wire molding for vertical runs on pole.

17C.12 OVERHEAD DISTRIBUTION TRANSFORMERS:

a. Overhead distribution transformers shall be conventional 2 bushing, oil insulated, self-cooled, 65°C temperature rise, 1 phase, transformers.

b. Primary voltage shall be 2400/4160 Y volts. Secondary voltage, KVA capacity, and method of connection shall be as indicated.

c. Transformers shall have two 2-1/2% FCAN and two 2-1/2% FCBN taps. Taps shall be set in the field to assure that the secondary no-load voltage is equal to the nameplate voltage.

d. Transformers shall be manufactured by G.E., Kuhlman, McGraw Edison, RTE, or Westinghouse.

17C.13 FUSE CUTOUTS:

a. Fuse cutouts shall be open type, single phase, rated 7.8/13.5 KV with an interrupting capacity of 20,000A. The mounting assembly shall permit the interchangeability of either 100A or 200A fuseholders. Fuseholders shall accept any standard make or type of universal fuse links.

b. Fuse links shall be single element, type K, of amperage rating as indicated.

c. Fuse cutouts shall be A.B. Chance Type F3, or McGraw Edison Type S1.

17C.14 GROUP OPERATED SECTIONALIZING SWITCHES:

a. Group operated sectionalizing switches shall be three pole, single throw, vertical break air switches rated 7.2 KV, 95 BIL, with a minimum momentary rating of 60,000 Amps. Ampere capacity to be as indicated.

b. Group operated switches shall be provided with a remote operating mechanism complete with operator, insulating section, shafts, brackets, and ground clamp.

c. Switches shall be Southen States Type WAG, Siemans-Allis Type TA, or S&C "Auldti".

17C.15 HOOKSTICK DISCONNECT SWITCHES:

a. Shall be rated 7.2 KV, 95 BIL, 600 amperes continuous with a momentary rating of at least 40,000 amperes. Blades shall be hard drawn bus copper. Blades shall be positively latched in the closed position. Switches shall be designed for single cross arm mounting.

b. Switches shall be Southern State Type PBO, Delta-Star Type B2-L or Kearney Type H.

17C.16 EXISTING OVERHEAD DISTRIBUTION SYSTEM:

a. The existing overhead distribution system shall be examined and any deficiencies noted shall be reported to the Engineer. All minor deficiencies shall be corrected.

b. Each insulator shall be inspected for carbonization, cracks, and improper ties or mounting. All bolted connections to messeners and line conductors shall be checked and tightened. All cross arms and dead end shall be checked and secured.

DIVISION 18
SECTION 18A
MODIFICATIONS TO EXISTING ELECTRICAL EQUIPMENT

18A.01 GENERAL:

a. This Section shall comply with the GENERAL requirements of Section 16A.

18A.02 AUTHORIZED SERVICE FACILITIES:

a. All work covered by this Section of the Specifications shall be performed by the authorized service facilities of the equipment's manufacturer or the authorized service facilities of other manufacturers of similar equipment.

18A.03 DESCRIPTION OF WORK:

a. Contactors shall be removed from their enclosures, cleaned, and examined. Contacts shall be cleaned, or replaced, and properly aligned. All linkage, pivots, pins, and moving parts shall be inspected for wear and replaced if wear is excessive. The contactor shall be lubricated, adjusted, tested, and placed in first class working condition.

b. All electrical connections shall be cleaned and tightened.

c. Meters, control devices, and protective devices shall be tested, adjusted, and calibrated. Trip settings of overload devices or protective relays shall be tested and set by use of a "Multi-Amp"type tester.

d. Insulating oil in oil filled devices shall be tested for dielectric strength and contaminates. All contaminates shall be removed and the oil restored to its original insulating value.

e. The structural enclosures of all motor controllers shall be cleaned inside and out. Mechanical interlocks on doors shall be made to operate freely.

f. Surge arrestors and capacitors shall be tested for open circuits and grounds.

18A.04 HIGH SERVICE PUMPS NOS. 6 & 7:

a. The existing motor control assembly for high service pumps Nos. 6 and 7 is a Westinghouse "Amp Gard" M.V. motor control assembly installed in 1960. The following work is to be performed:

1. Remove existing contactors. Dismantle, inspect, and restore to first class operating condition.

2. Provide phase failure protection for each contactor.

3. Provide overload protection for each phase, (overloads in Ø a and Ø c are existing). All overload devices to be identical.

4. Provide an ammeter, ammeter selector switch, elapsed time meter, and red and green (run-stopped) pilot lights for each contactor.

5. Provide one voltmeter and voltmeter selector switch.

6. Provide current transformers and potential transformers for operation of meters.

7. Check and clean main disconnect switch. Free and adjust interlocking linkage and operating mechanism.

8. Other work as specified in 18.03.

18A.05 NEW HIGH SERVICE PUMPING STATION:

a. The motor control assembly for high service pumps numbers 8, 9, and 10 is a Westinghouse "Amp Gard" M.V. motor controller assembly installed about 1971. The assembly is two section and consists of two 400A NEMA E-2 contactors for two 1,000 HP motors, one 200A NEMA E-2 contactor for one 700 H.P. motor, and one 200A NEMA E-2 contactor for a 30 KVA feeder. All contactors are FVNR. The following work is to be performed:

1. Provide phase-failure protection for each motor.

2. Provide overload protection for each phase of each motor. (Overloads in Ø a and Ø c are existing). All overload devices to be identical.

3. Provide emergency "OPEN-CLOSE" control station for incoming line remote circuit breaker.

4. Other work as specified in 18.03.

18A.06 RAW WATER PUMPS NOS. 4 & 5:

a. The existing motor control assembly for R.W. pumps Nos. 4 and 5 is a Westinghouse "Amp Gard" assembly consisting of two 200A, NEMA E-2, FVNR motor controllers. The following work is to be performed

1. Provide phase-failure protection for each raw water pump.

2. Provide overload protection for each phase (overloads in Ø a and Ø c are existing). All overload devices to be identical.

3. Provide emergency "OPEN-CLOSE" control station for incoming line remote breaker.

4. Other work as specified in 18.03.

b. The existing motor control center for auxiliary loads is a Westinghouse Type W motor control center. The molded case main breaker is to be removed, disassembled, cleaned of all corrosion, tested, and reinstalled. The incoming conductors shall be sealed to prevent moisture from entering into the MCC. All power, control connections and contacts shall be inspected, cleaned and tightened.

18A.07 POLE MOUNTED OIL CIRCUIT BREAKERS:

a. The service conductors to the Control Building, the new river water pumping station, and the new high service pumping station, are protected by a Westinghouse Type 400-PR oil switch with remote, pole mounted, controls. The oil switches and controls shall be checked as specified in 18.03.

b. The existing control circuits shall be modified to prevent the automatic reclosing of the switch. The "CLOSE" operation is to be controlled by a manual push-button only.

c. Overload trip settings shall be adjusted to trip as indicated.

18A.08 PROTECTIVE DEVICES:

a. The overload and the phase-failure protective devices shall be a standard product of the controller manufacturer normally used by the manufacturer.

b. The Contractor shall submit, for the approval of the Engineer, detailed information pertaining to these devices and to their installation in the existing controllers.

ADDENDUM NO. 1

PROPOSAL, CONTRACT DOCUMENTS, AND CONSTRUCTION SPECIFICATIONS

FOR CONSTRUCTING

ELECTRICAL & MECHANICAL IMPROVEMENTS

J. G. BEACHAM FILTRATION PLANT

FOR

THE CITY OF ATHENS, GEORGIA

Bids Received Until 2:00 P.M., Local Time, May 15, 1979

ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY INSERTING ITS NUMBER IN THE PROPOSAL; FAILURE TO DO SO MAY SUBJECT BONA FIDE BIDDER TO DISQUALIFICATION. THIS ADDENDUM FORMS PART OF THE PROJECT DOCUMENTS; IT MODIFIES THEM AS FOLLOWS:

BID DOCUMENTS

Section 1B Instructions to Bidders	Pre-Bid Conference: The pre-bid conference will be held in the office of the Engineer, Newcomb & Boyd, 1700 Commerce Drive, N.W., Atlanta, Georgia, at 2:00 P.M., Friday, May 4, 1979.
Section 15B	Paragraph 15B.07e: To list of manufacturers add Federal Pump Corporation, Model CCV-420 - 1/3 -2.
	Paragraph 15B.17a: To list of manufacturers add Airstream Products, Model GA.

ADDENDUM NO. 2

PROPOSAL, CONTRACT DOCUMENTS, AND CONSTRUCTION SPECIFICATIONS

FOR CONSTRUCTING

ELECTRICAL & MECHANICAL IMPROVEMENTS

J. G. BEACHAM FILTRATION PLANT

FOR

THE CITY OF ATHENS, GEORGIA

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BID DOCUMENTS

Section 1B Instructions to Bidders	Refer to paragraph 1B.04 c (2) Pre-Bid Conference. Delete this paragraph in its entirety. Insert the following:

(2) Representatives of the Owner will be present at the pre-bid conference to answer questions from Bidders pertaining to existing conditions and the bid and construction documents. It is strongly recommended that the Bidders, or their representatives, attend the pre-bid conference.

Newcomb & Boyd
Consulting Engineers
Atlanta, Ga.

May 3, 1979

ADDENDUM NO. 3

PROPOSAL, CONTRACT DOCUMENTS, AND CONSTRUCTION SPECIFICATIONS

FOR CONSTRUCTING

ELECTRICAL & MECHANICAL IMPROVEMENTS

J. G. BEACHAM FILTRATION PLANT

FOR

THE CITY OF ATHENS, GEORGIA

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CONSTRUCTION SPECIFICATIONS

Section 16B — Reference page 16B-10. Page 16B-10 was omitted in bound set of Specifications. Insert the attached page 16B-10 between pages 16B-9 and 16B-11.

CONSTRUCTION DRAWINGS

Sheet 4 — Reference One-Line Diagram: One-line diagram indicates only one by-pass switch between the West Loop and East Loop. Diagram should show two by-pass switches as shown in "By-Pass Bus", Sheet 4, and one-line diagram, Sheet 2.

i. Transformers shall be manufactured by G.E., Kuhlman, McGraw-Edison, RTE, or Westinghouse.

16B.12 WOOD BACKBOARDS:

a. Wood backboards shall be furnished and installed for mounting of equipment and devices to be installed as indicated on the Drawings or as specified below:

(1) Where two or more cabinets, safety switches, individual circuit breakers, motor starters, time switches, contactors, meters, control devices and transformers are surface mounted at one location, a wood backboard shall be provided for mounting of such equipment. Size of backboard shall be commensurate with number and size of devices and equipment to be mounted thereon.

b. All wiring on wood backboards shall be made in galvanized wiring troughs and rigid conduit.

c. Wood backboards shall be 3/4 inch thick, exterior grade "B-C" plywood fastened to wall with 1/4 inch or larger bolts and expansion shields. Backboards shall be painted two coats of gray enamel.

d. Nameplates shall be furnished and affixed by the Contractor on all devices installed in wood backboards. Such nameplates are described elsewhere in this Section.

16B.13 PORTABLE CONTACTOR LIFT:

a. The Contractor shall provide one portable contactor lift for servicing of contactors in the existing Raw Water Pumping Station and High Service Pumping Station motor control assemblies.

b. The lift shall be suitable for use in removing and replacing both the 200A and 400A contactors. The platform shall extend approximately 9 inches beyond the front of the wheels to clear existing obstructions.

c. The lift shall be similar to contactor lifts furnished by G.E., Westinghouse, or I.T.E.

16B.14 4.8 KV ISOLATING SWITCH:

a. The isolating switch for H.S. pumps Nos. 6 and 7 shall be a three pole single throw isolator switch rated 600A, 4.8 KV.

b. Except for the terminals, all current carrying parts of each phase shall be enclosed in separate insulators. The open position of the switch shall be indicated by a visible gap between the stationary and movable insulators. The operating handle shall be self-latching in both the open and closed positions.

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A201

General Conditions of the Contract for Construction

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS MODIFICATION

1976 EDITION

TABLE OF ARTICLES

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13. UNCOVERING AND CORRECTION OF WORK
14. TERMINATION OF THE CONTRACT

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ARTICLE 1

CONTRACT DOCUMENTS

1.1 DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, and all Addenda issued prior to and all Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a written interpretation issued by the Architect pursuant to Subparagraph 2.2.8, or (4) a written order for a minor change in the Work issued by the Architect pursuant to Paragraph 12.4. The Contract Documents do not include Bidding Documents such as the Advertisement or Invitation to Bid, the Instructions to Bidders, sample forms, the Contractor's Bid or portions of Addenda relating to any of these, or any other documents, unless specifically enumerated in the Owner-Contractor Agreement.

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. This Contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification as defined in Subparagraph 1.1.1. The Contract Documents shall not be construed to create any contractual relationship of any kind between the Architect and the Contractor, but the Architect shall be entitled to performance of obligations intended for his benefit, and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the Architect and any Subcontractor or Sub-subcontractor.

1.1.3 THE WORK

The Work comprises the completed construction required by the Contract Documents and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract Documents shall be signed in not less than triplicate by the Owner and Contractor. If either the Owner or the Contractor or both do not sign the Conditions of the Contract, Drawings, Specifications, or any of the other Contract Documents, the Architect shall identify such Documents.

1.2.2 By executing the Contract, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents.

1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.4 The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.3 OWNERSHIP AND USE OF DOCUMENTS

1.3.1 All Drawings, Specifications and copies thereof furnished by the Architect are and shall remain his property. They are to be used only with respect to this Project and are not to be used on any other project. With the exception of one contract set for each party to the Contract, such documents are to be returned or suitably accounted for to the Architect on request at the completion of the Work. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's common law copyright or other reserved rights.

ARTICLE 2

ARCHITECT

2.1 DEFINITION

2.1.1 The Architect is the person lawfully licensed to practice architecture, or an entity lawfully practicing architecture identified as such in the Owner-Contractor Agreement, and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Architect means the Architect or his authorized representative.

2.2 ADMINISTRATION OF THE CONTRACT

2.2.1 The Architect will provide administration of the Contract as hereinafter described.

2.2.2 The Architect will be the Owner's representative during construction and until final payment is due. The Architect will advise and consult with the Owner. The Owner's instructions to the Contractor shall be forwarded

through the Architect. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with Subparagraph 2.2.18.

2.2.3 The Architect will visit the site at intervals appropriate to the stage of construction to familiarize himself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of his on-site observations as an architect, he will keep the Owner informed of the progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor.

2.2.4 The Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not be responsible for or have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

2.2.5 The Architect shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so the Architect may perform his functions under the Contract Documents.

2.2.6 Based on the Architect's observations and an evaluation of the Contractor's Applications for Payment, the Architect will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts, as provided in Paragraph 9.4.

2.2.7 The Architect will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by both the Owner and Contractor.

2.2.8 The Architect will render interpretations necessary for the proper execution or progress of the Work, with reasonable promptness and in accordance with any time limit agreed upon. Either party to the Contract may make written request to the Architect for such interpretations.

2.2.9 Claims, disputes and other matters in question between the Contractor and the Owner relating to the execution or progress of the Work or the interpretation of the Contract Documents shall be referred initially to the Architect for decision which he will render in writing within a reasonable time.

2.2.10 All interpretations and decisions of the Architect shall be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. In his capacity as interpreter and judge, he will endeavor to secure faithful performance by both the Owner and the Contractor, will not show partiality to either, and will not be liable for the result of any interpretation or decision rendered in good faith in such capacity.

2.2.11 The Architect's decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.

2.2.12 Any claim, dispute or other matter in question between the Contractor and the Owner referred to the Architect, except those relating to artistic effect as provided in Subparagraph 2.2.11 and except those which have been waived by the making or acceptance of final payment as provided in Subparagraphs 9.9.4 and 9.9.5, shall be subject to arbitration upon the written demand of either party. However, no demand for arbitration of any such claim, dispute or other matter may be made until the earlier of (1) the date on which the Architect has rendered a written decision, or (2) the tenth day after the parties have presented their evidence to the Architect or have been given a reasonable opportunity to do so, if the Architect has not rendered his written decision by that date. When such a written decision of the Architect states (1) that the decision is final but subject to appeal, and (2) that any demand for arbitration of a claim, dispute or other matter covered by such decision must be made within thirty days after the date on which the party making the demand receives the written decision, failure to demand arbitration within said thirty days' period will result in the Architect's decision becoming final and binding upon the Owner and the Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede any arbitration proceedings unless the decision is acceptable to all parties concerned.

2.2.13 The Architect will have authority to reject Work which does not conform to the Contract Documents. Whenever, in his opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the Work in accordance with Subparagraph 7.7.2 whether or not such Work be then fabricated, installed or completed. However, neither the Architect's authority to act under this Subparagraph 2.2.13, nor any decision made by him in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Architect to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.

2.2.14 The Architect will review and approve or take other appropriate action upon Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for conformance with the design concept of the Work and with the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

2.2.15 The Architect will prepare Change Orders in accordance with Article 12, and will have authority to order minor changes in the Work as provided in Subparagraph 12.4.1.

2.2.16 The Architect will conduct inspections to determine the dates of Substantial Completion and final completion, will receive and forward to the Owner for the Owner's review written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of Paragraph 9.9.

2.2.17 If the Owner and Architect agree, the Architect will provide one or more Project Representatives to assist the Architect in carrying out his responsibilities at the site. The duties, responsibilities and limitations of authority of any such Project Representative shall be as set forth in an exhibit to be incorporated in the Contract Documents.

2.2.18 The duties, responsibilities and limitations of authority of the Architect as the Owner's representative during construction as set forth in the Contract Documents will not be modified or extended without written consent of the Owner, the Contractor and the Architect.

2.2.19 In case of the termination of the employment of the Architect, the Owner shall appoint an architect against whom the Contractor makes no reasonable objection whose status under the Contract Documents shall be that of the former architect. Any dispute in connection with such appointment shall be subject to arbitration.

ARTICLE 3

OWNER

3.1 DEFINITION

3.1.1 The Owner is the person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Owner means the Owner or his authorized representative.

3.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

3.2.1 The Owner shall, at the request of the Contractor, at the time of execution of the Owner-Contractor Agreement, furnish to the Contractor reasonable evidence that he has made financial arrangements to fulfill his obligations under the Contract. Unless such reasonable evidence is furnished, the Contractor is not required to execute the Owner-Contractor Agreement or to commence the Work.

3.2.2 The Owner shall furnish all surveys describing the physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

3.2.3 Except as provided in Subparagraph 4.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

3.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

3.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, all copies of Drawings and Specifications reasonably necessary for the execution of the Work.

3.2.6 The Owner shall forward all instructions to the Contractor through the Architect.

3.2.7 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Work by Owner or by Separate Contractors, Payments and Completion, and Insurance in Articles 6, 9 and 11 respectively.

3.3 OWNER'S RIGHT TO STOP THE WORK

3.3.1 If the Contractor fails to correct defective Work as required by Paragraph 13.2 or persistently fails to carry out the Work in accordance with the Contract Documents, the Owner, by a written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

3.4 OWNER'S RIGHT TO CARRY OUT THE WORK

3.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within seven days after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, after seven days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy he may have, make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and the amount charged to the Contractor are both subject to the prior approval of the Architect. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

ARTICLE 4

CONTRACTOR

4.1 DEFINITION

4.1.1 The Contractor is the person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Contractor means the Contractor or his authorized representative.

4.2 REVIEW OF CONTRACT DOCUMENTS

4.2.1 The Contractor shall carefully study and compare the Contract Documents and shall at once report to the Architect any error, inconsistency or omission he may discover. The Contractor shall not be liable to the Owner or

the Architect for any damage resulting from any such errors, inconsistencies or omissions in the Contract Documents. The Contractor shall perform no portion of the Work at any time without Contract Documents or, where required, approved Shop Drawings, Product Data or Samples for such portion of the Work.

4.3 SUPERVISION AND CONSTRUCTION PROCEDURES

4.3.1 The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

4.3.2 The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor.

4.3.3 The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Architect in his administration of the Contract, or by inspections, tests or approvals required or performed under Paragraph 7.7 by persons other than the Contractor.

4.4 LABOR AND MATERIALS

4.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

4.4.2 The Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him.

4.5 WARRANTY

4.5.1 The Contractor warrants to the Owner and the Architect that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of Paragraph 13.2.

4.6 TAXES

4.6.1 The Contractor shall pay all sales, consumer, use and other similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted at the time bids are received, whether or not yet effective.

4.7 PERMITS, FEES AND NOTICES

4.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required at the time the bids are received.

4.7.2 The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work.

4.7.3 It is not the responsibility of the Contractor to make certain that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, he shall promptly notify the Architect in writing, and any necessary changes shall be accomplished by appropriate Modification.

4.7.4 If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Architect, he shall assume full responsibility therefor and shall bear all costs attributable thereto.

4.8 ALLOWANCES

4.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by these allowances shall be supplied for such amounts and by such persons as the Owner may direct, but the Contractor will not be required to employ persons against whom he makes a reasonable objection.

4.8.2 Unless otherwise provided in the Contract Documents:

- **.1** these allowances shall cover the cost to the Contractor, less any applicable trade discount, of the materials and equipment required by the allowance delivered at the site, and all applicable taxes;
- **.2** the Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Sum and not in the allowance;
- **.3** whenever the cost is more than or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which will recognize changes, if any, in handling costs on the site, labor, installation costs, overhead, profit and other expenses.

4.9 SUPERINTENDENT

4.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

4.10 PROGRESS SCHEDULE

4.10.1 The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information an estimated progress sched-

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ule for the Work. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

4.11 DOCUMENTS AND SAMPLES AT THE SITE

4.11.1 The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be available to the Architect and shall be delivered to him for the Owner upon completion of the Work.

4.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

4.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or any Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

4.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.

4.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

4.12.4 The Contractor shall review, approve and submit, with reasonable promptness and in such sequence as to cause no delay in the Work or in the work of the Owner or any separate contractor, all Shop Drawings, Product Data and Samples required by the Contract Documents.

4.12.5 By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

4.12.6 The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data or Samples under Subparagraph 2.2.14 unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Architect's approval thereof.

4.12.7 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Architect on previous submittals.

4.12.8 No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Architect as provided in Subparagraph 2.2.14. All such portions of the Work shall be in accordance with approved submittals.

4.13 USE OF SITE

4.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with any materials or equipment.

4.14 CUTTING AND PATCHING OF WORK

4.14.1 The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the Work or to make its several parts fit together properly.

4.14.2 The Contractor shall not damage or endanger any portion of the Work or the work of the Owner or any separate contractors by cutting, patching or otherwise altering any work, or by excavation. The Contractor shall not cut or otherwise alter the work of the Owner or any separate contractor except with the written consent of the Owner and of such separate contractor. The Contractor shall not unreasonably withhold from the Owner or any separate contractor his consent to cutting or otherwise altering the Work.

4.15 CLEANING UP

4.15.1 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the Work he shall remove all his waste materials and rubbish from and about the Project as well as all his tools, construction equipment, machinery and surplus materials.

4.15.2 If the Contractor fails to clean up at the completion of the Work, the Owner may do so as provided in Paragraph 3.4 and the cost thereof shall be charged to the Contractor.

4.16 COMMUNICATIONS

4.16.1 The Contractor shall forward all communications to the Owner through the Architect.

4.17 ROYALTIES AND PATENTS

4.17.1 The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Architect.

4.18 INDEMNIFICATION

4.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner and the Architect and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom,

and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph 4.18.

4.18.2 In any and all claims against the Owner or the Architect or any of their agents or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 4.18 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

4.18.3 The obligations of the Contractor under this Paragraph 4.18 shall not extend to the liability of the Architect, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, his agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITION

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the Work at the site. The term Subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative. The term Subcontractor does not include any separate contractor or his subcontractors.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform any of the Work at the site. The term Sub-subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise required by the Contract Documents or the Bidding Documents, the Contractor, as soon as practicable after the award of the Contract, shall furnish to the Owner and the Architect in writing the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with any such proposed person or entity to whom the Owner or the Architect has made reasonable objection under the provisions of Subparagraph 5.2.1. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection.

5.2.3 If the Owner or the Architect has reasonable objection to any such proposed person or entity, the Contractor shall submit a substitute to whom the Owner or the Architect has no reasonable objection, and the Contract Sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued; however, no increase in the Contract Sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting names as required by Subparagraph 5.2.1.

5.2.4 The Contractor shall make no substitution for any Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By an appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and the Architect. Said agreement shall preserve and protect the rights of the Owner and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the Contractor-Subcontractor agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with his Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the Subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Paragraph 5.3, and identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Documents available to his Sub-subcontractors.

ARTICLE 6

WORK BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform work related to the Project with his own forces, and to award

separate contracts in connection with other portions of the Project or other work on the site under these or similar Conditions of the Contract. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, he shall make such claim as provided elsewhere in the Contract Documents.

6.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the term Contractor in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner will provide for the coordination of the work of his own forces and of each separate contractor with the Work of the Contractor, who shall cooperate therewith as provided in Paragraph 6.2.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate his Work with theirs as required by the Contract Documents.

6.2.2 If any part of the Contractor's Work depends for proper execution or results upon the work of the Owner or any separate contractor, the Contractor shall, prior to proceeding with the Work, promptly report to the Architect any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acceptance of the Owner's or separate contractors' work as fit and proper to receive his Work, except as to defects which may subsequently become apparent in such work by others.

6.2.3 Any costs caused by defective or ill-timed work shall be borne by the party responsible therefor.

6.2.4 Should the Contractor wrongfully cause damage to the work or property of the Owner, or to other work on the site, the Contractor shall promptly remedy such damage as provided in Subparagraph 10.2.5.

6.2.5 Should the Contractor wrongfully cause damage to the work or property of any separate contractor, the Contractor shall upon due notice promptly attempt to settle with such other contractor by agreement, or otherwise to resolve the dispute. If such separate contractor sues or initiates an arbitration proceeding against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor who shall defend such proceedings at the Owner's expense, and if any judgment or award against the Owner arises therefrom the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorneys' fees and court or arbitration costs which the Owner has incurred.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises between the Contractor and separate contractors as to their responsibility for cleaning up as required by Paragraph 4.15, the Owner may clean up and charge the cost thereof to the contractors responsible therefor as the Architect shall determine to be just.

ARTICLE 7

MISCELLANEOUS PROVISIONS

7.1 GOVERNING LAW

7.1.1 The Contract shall be governed by the law of the place where the Project is located.

7.2 SUCCESSORS AND ASSIGNS

7.2.1 The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner.

7.3 WRITTEN NOTICE

7.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or entity or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to him who gives the notice.

7.4 CLAIMS FOR DAMAGES

7.4.1 Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the other party or of any of his employees, agents or others for whose acts he is legally liable, claim shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

7.5 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.5.1 The Owner shall have the right to require the Contractor to furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder if and as required in the Bidding Documents or in the Contract Documents.

7.6 RIGHTS AND REMEDIES

7.6.1 The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

7.6.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

7.7 TESTS

7.7.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Architect timely notice of its readiness so the Architect may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals conducted by public authorities. Unless otherwise provided, the Owner shall bear all costs of other inspections, tests or approvals.

7.7.2 If the Architect determines that any Work requires special inspection, testing, or approval which Subparagraph 7.7.1 does not include, he will, upon written authorization from the Owner, instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Subparagraph 7.7.1. If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, the Contractor shall bear all costs thereof, including compensation for the Architect's additional services made necessary by such failure; otherwise the Owner shall bear such costs, and an appropriate Change Order shall be issued.

7.7.3 Required certificates of inspection, testing or approval shall be secured by the Contractor and promptly delivered by him to the Architect.

7.7.4 If the Architect is to observe the inspections, tests or approvals required by the Contract Documents, he will do so promptly and, where practicable, at the source of supply.

7.8 INTEREST

7.8.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing at the place of the Project.

7.9 ARBITRATION

7.9.1 All claims, disputes and other matters in question between the Contractor and the Owner arising out of, or relating to, the Contract Documents or the breach thereof, except as provided in Subparagraph 2.2.11 with respect to the Architect's decisions on matters relating to artistic effect, and except for claims which have been waived by the making or acceptance of final payment as provided by Subparagraphs 9.9.4 and 9.9.5, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining unless the parties mutually agree otherwise. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation, joinder or in any other manner, the Architect, his employees or consultants except by written consent containing a specific reference to the Owner-Contractor Agreement and signed by the Architect, the Owner, the Contractor and any other person sought to be joined. No arbitration shall include by consolidation, joinder or in any other manner, parties other than the Owner, the Contractor and any other persons substantially involved in a common question of fact or law, whose presence is required if complete relief is to be accorded in the arbitration. No person other than the Owner or Contractor shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Any consent to arbitration involving an additional person or persons shall not constitute consent to arbitration of any dispute not described therein or with any person not named or described therein. The foregoing agreement to arbitrate and any other agreement to arbitrate with an additional person or persons duly consented to by the parties to the Owner-Contractor Agreement shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

7.9.2 Notice of the demand for arbitration shall be filed in writing with the other party to the Owner-Contractor Agreement and with the American Arbitration Association, and a copy shall be filed with the Architect. The demand for arbitration shall be made within the time limits specified in Subparagraph 2.2.12 where applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

7.9.3 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any arbitration proceedings, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents.

ARTICLE 8

TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, the Contract Time is the period of time allotted in the Contract Documents for Substantial Completion of the Work as defined in Subparagraph 8.1.3, including authorized adjustments thereto.

8.1.2 The date of commencement of the Work is the date established in a notice to proceed. If there is no notice to proceed, it shall be the date of the Owner-Contractor Agreement or such other date as may be established therein.

8.1.3 The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Architect when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended.

8.1.4 The term day as used in the Contract Documents shall mean calendar day unless otherwise specifically designated.

8.2 PROGRESS AND COMPLETION

8.2.1 All time limits stated in the Contract Documents are of the essence of the Contract.

8.2.2 The Contractor shall begin the Work on the date of commencement as defined in Subparagraph 8.1.2. He shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the Owner or the Architect, or by any employee of either, or by any separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in transportation, adverse weather conditions not reasonably anticipatable, unavoidable casualties, or any causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by any other cause which the Architect determines may justify the delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Any claim for extension of time shall be made in writing to the Architect not more than twenty days after the commencement of the delay; otherwise it shall be waived. In the case of a continuing delay only one claim is necessary. The Contractor shall provide an estimate of the probable effect of such delay on the progress of the Work.

8.3.3 If no agreement is made stating the dates upon which interpretations as provided in Subparagraph 2.2.8 shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations until fifteen days after written request is made for them, and not then unless such claim is reasonable.

8.3.4 This Paragraph 8.3 does not exclude the recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Owner-Contractor Agreement and, including authorized adjustments thereto, is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to the various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used only as a basis for the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date for each progress payment established in the Owner-Contractor Agreement, the Contractor shall submit to the Architect an itemized Application for Payment, notarized if required, supported by such data substantiating the Contractor's right to payment as the Owner or the Architect may require, and reflecting retainage, if any, as provided elsewhere in the Contract Documents.

9.3.2 Unless otherwise provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site and, if approved in advance by the Owner, payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Payments for materials or equipment stored on or off the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials or equipment or otherwise protect the Owner's interest, including applicable insurance and transportation to the site for those materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in this Article 9 as "liens"; and that no Work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing Work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after the receipt of the Contractor's Application for Payment, either issue a Certificate for Payment to the Owner, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor in writing his reasons for withholding a Certificate as provided in Subparagraph 9.6.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on his observations at the site as provided in Subparagraph 2.2.3 and the data comprising the Application for Payment, that the Work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to the results of any subsequent tests required by or performed under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in his Certificate); and that the Contractor is entitled to payment in the amount certified. However, by issuing a Certificate for Payment, the Architect shall not thereby be deemed to represent that he has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work or that he has reviewed the construction means, methods, techniques,

sequences or procedures, or that he has made any examination to ascertain how or for what purpose the Contractor has used the moneys previously paid on account of the Contract Sum.

9.5 PROGRESS PAYMENTS

9.5.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents.

9.5.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's Work, the amount to which said Subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such Subcontractor's Work. The Contractor shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payments to his Subsubcontractors in similar manner.

9.5.3 The Architect may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for by the Contractor and the action taken thereon by the Architect on account of Work done by such Subcontractor.

9.5.4 Neither the Owner nor the Architect shall have any obligation to pay or to see to the payment of any moneys to any Subcontractor except as may otherwise be required by law.

9.5.5 No Certificate for a progress payment, nor any progress payment, nor any partial or entire use or occupancy of the Project by the Owner, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

9.6 PAYMENTS WITHHELD

9.6.1 The Architect may decline to certify payment and may withhold his Certificate in whole or in part, to the extent necessary reasonably to protect the Owner, if in his opinion he is unable to make representations to the Owner as provided in Subparagraph 9.4.2. If the Architect is unable to make representations to the Owner as provided in Subparagraph 9.4.2 and to certify payment in the amount of the Application, he will notify the Contractor as provided in Subparagraph 9.4.1. If the Contractor and the Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which he is able to make such representations to the Owner. The Architect may also decline to certify payment or, because of subsequently discovered evidence or subsequent observations, he may nullify the whole or any part of any Certificate for Payment previously issued, to such extent as may be necessary in his opinion to protect the Owner from loss because of:

.1 defective work not remedied,
.2 third party claims filed or reasonable evidence indicating probable filing of such claims,
.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment,
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum,
.5 damage to the Owner or another contractor,
.6 reasonable evidence that the Work will not be completed within the Contract Time, or
.7 persistent failure to carry out the Work in accordance with the Contract Documents.

9.6.2 When the above grounds in Subparagraph 9.6.1 are removed, payment shall be made for amounts withheld because of them.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents any amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and the Architect, stop the Work until payment of the amount owing has been received. The Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be effected by appropriate Change Order in accordance with Paragraph 12.3.

9.8 SUBSTANTIAL COMPLETION

9.8.1 When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete as defined in Subparagraph 8.1.3, the Contractor shall prepare for submission to the Architect a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Architect on the basis of an inspection determines that the Work or designated portion thereof is substantially complete, he will then prepare a Certificate of Substantial Completion which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

9.8.2 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof, as provided in the Contract Documents.

9.9 FINAL COMPLETION AND FINAL PAYMENT

9.9.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will

promptly make such inspection and, when he finds the Work acceptable under the Contract Documents and the Contract fully performed, he will promptly issue a final Certificate for Payment stating that to the best of his knowledge, information and belief, and on the basis of his observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor, and noted in said final Certificate, is due and payable. The Architect's final Certificate for Payment will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment as set forth in Subparagraph 9.9.2 have been fulfilled.

9.9.2 Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied, (2) consent of surety, if any, to final payment and (3), if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the Owner. If any Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify him against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.9.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by the issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than the retainage stipulated in the Contract Documents, and if bonds have been furnished as provided in Paragraph 7.5, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.9.4 The making of final payment shall constitute a waiver of all claims by the Owner except those arising from:

- **.1** unsettled liens,
- **.2** faulty or defective Work appearing after Substantial Completion,
- **.3** failure of the Work to comply with the requirements of the Contract Documents, or
- **.4** terms of any special warranties required by the Contract Documents.

9.9.5 The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

- **.1** all employees on the Work and all other persons who may be affected thereby;
- **.2** all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-subcontractors; and
- **.3** other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.

10.2.4 When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy all damage or loss (other than damage or loss insured under Paragraph 11.3) to any property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, any Subcontractor, any Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to the acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to his obligations under Paragraph 4.18.

10.2.6 The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and the Architect.

10.2.7 The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.

10.3 EMERGENCIES

10.3.1 In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion, to prevent threatened damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in Article 12 for Changes in the Work.

ARTICLE 11

INSURANCE

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- **.1** claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts;
- **.2** claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;
- **.3** claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;
- **.4** claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;
- **.5** claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and
- **.6** claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than any limits of liability specified in the Contract Documents, or required by law, whichever is greater.

11.1.3 The insurance required by Subparagraph 11.1.1 shall include contractual liability insurance applicable to the Contractor's obligations under Paragraph 4.18.

11.1.4 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled until at least thirty days' prior written notice has been given to the Owner.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining his own liability insurance and, at his option, may purchase and maintain such insurance as will protect him against claims which may arise from operations under the Contract.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism and malicious mischief. If the Owner does not intend to purchase such insurance for the full insurable value of the entire Work, he shall inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of himself, his Subcontractors and the Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by failure of the Owner to purchase or maintain such insurance and to so notify the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto. If not covered under the all risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included in an Application for Payment under Subparagraph 9.3.2.

11.3.2 The Owner shall purchase and maintain such boiler and machinery insurance as may be required by the Contract Documents or by law. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

11.3.3 Any loss insured under Subparagraph 11.3.1 is to be adjusted with the Owner and made payable to the Owner as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgagee clause and of Subparagraph 11.3.8. The Contractor shall pay each Subcontractor a just share of any insurance moneys received by the Contractor, and by appropriate agreement, written where legally required for validity, shall require each Subcontractor to make payments to his Sub-subcontractors in similar manner.

11.3.4 The Owner shall file a copy of all policies with the Contractor before an exposure to loss may occur.

11.3.5 If the Contractor requests in writing that insurance for risks other than those described in Subparagraphs 11.3.1 and 11.3.2 or other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.3.6 The Owner and Contractor waive all rights against (1) each other and the Subcontractors, Sub-subcontractors, agents and employees each of the other, and (2) the Architect and separate contractors, if any, and their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by insurance obtained pursuant to this Paragraph 11.3 or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The foregoing waiver afforded the Architect, his agents and employees shall not extend to the liability imposed by Subparagraph 4.18.3. The Owner or the Contractor, as appropriate, shall require of the Architect, separate contractors, Subcontractors and Sub-subcontractors by appropriate agreements, written where legally required for validity, similar waivers each in favor of all other parties enumerated in this Subparagraph 11.3.6.

11.3.7 If required in writing by any party in interest, the Owner as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of his duties. He shall deposit in a separate account any money so received, and he shall distribute it in accordance with such agreement as the parties in interest may reach, or in accordance with an award by arbitration in which case the procedure shall be as provided in Paragraph 7.9. If after such loss no other special agreement is made, replacement of damaged work shall be covered by an appropriate Change Order.

11.3.8 The Owner as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within five days after the occurrence of loss to the Owner's exercise of this power, and if such objection be made, arbitrators shall be chosen as provided in Paragraph 7.9. The Owner as trustee shall, in that case, make settlement with the insurers in accordance with the directions of such arbitrators. If distribution of the insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.3.9 If the Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion thereof, such occupancy or use shall not commence prior to a time mutually agreed to by the Owner and Contractor and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. This insurance shall not be cancelled or lapsed on account of such partial occupancy or use. Consent of the Contractor and of the insurance company or companies to such occupancy or use shall not be unreasonably withheld.

11.4 LOSS OF USE INSURANCE

11.4.1 The Owner, at his option, may purchase and maintain such insurance as will insure him against loss of use of his property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of his property, including consequential losses due to fire or other hazards however caused, to the extent covered by insurance under this Paragraph 11.4.

ARTICLE 12

CHANGES IN THE WORK

12.1 CHANGE ORDERS

12.1.1 A Change Order is a written order to the Contractor signed by the Owner and the Architect, issued after execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum or the Contract Time.

12.1.2 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents.

12.1.3 The cost or credit to the Owner resulting from a change in the Work shall be determined in one or more of the following ways:

- **.1** by mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** by unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** by cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** by the method provided in Subparagraph 12.1.4.

12.1.4 If none of the methods set forth in Clauses 12.1.3.1, 12.1.3.2 or 12.1.3.3 is agreed upon, the Contractor, provided he receives a written order signed by the Owner, shall promptly proceed with the Work involved. The cost of such Work shall then be determined by the Architect on the basis of the reasonable expenditures and savings of those performing the Work attributable to the change, including, in the case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Clauses 12.1.3.3 and 12.1.3.4 above, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data for inclusion in a Change Order. Unless otherwise provided in the Contract Documents, cost shall be limited to the following: cost of materials, including sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; bond premiums; rental value of equipment and machinery; and the additional costs of supervision and field office personnel directly attributable to the change. Pending final determination of cost to the Owner, payments on account shall be made on the Architect's Certificate for Payment. The amount of credit to be allowed by the Contractor to the Owner for any deletion

or change which results in a net decrease in the Contract Sum will be the amount of the actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any, with respect to that change.

12.1.5 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of Work proposed will cause substantial inequity to the Owner or the Contractor, the applicable unit prices shall be equitably adjusted.

12.2 CONCEALED CONDITIONS

12.2.1 Should concealed conditions encountered in the performance of the Work below the surface of the ground or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions below the surface of the ground or should concealed or unknown conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, be encountered, the Contract Sum shall be equitably adjusted by Change Order upon claim by either party made within twenty days after the first observance of the conditions.

12.3 CLAIMS FOR ADDITIONAL COST

12.3.1 If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Architect written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with Paragraph 10.3. No such claim shall be valid unless so made. If the Owner and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the Architect. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

12.3.2 If the Contractor claims that additional cost is involved because of, but not limited to, (1) any written interpretation pursuant to Subparagraph 2.2.8, (2) any order by the Owner to stop the Work pursuant to Paragraph 3.3 where the Contractor was not at fault, (3) any written order for a minor change in the Work issued pursuant to Paragraph 12.4, or (4) failure of payment by the Owner pursuant to Paragraph 9.7, the Contractor shall make such claim as provided in Subparagraph 12.3.1.

12.4 MINOR CHANGES IN THE WORK

12.4.1 The Architect will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order, and shall be binding on the Owner and the Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 13

UNCOVERING AND CORRECTION OF WORK

13.1 UNCOVERING OF WORK

13.1.1 If any portion of the Work should be covered contrary to the request of the Architect or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for his observation and shall be replaced at the Contractor's expense.

13.1.2 If any other portion of the Work has been covered which the Architect has not specifically requested to observe prior to being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the Owner or a separate contractor as provided in Article 6, in which event the Owner shall be responsible for the payment of such costs.

13.2 CORRECTION OF WORK

13.2.1 The Contractor shall promptly correct all Work rejected by the Architect as defective or as failing to conform to the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for the Architect's additional services made necessary thereby.

13.2.2 If, within one year after the Date of Substantial Completion of the Work or designated portion thereof or within one year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This obligation shall survive termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

13.2.3 The Contractor shall remove from the site all portions of the Work which are defective or non-conforming and which have not been corrected under Subparagraphs 4.5.1, 13.2.1 and 13.2.2, unless removal is waived by the Owner.

13.2.4 If the Contractor fails to correct defective or non-conforming Work as provided in Subparagraphs 4.5.1, 13.2.1 and 13.2.2, the Owner may correct it in accordance with Paragraph 3.4.

13.2.5 If the Contractor does not proceed with the correction of such defective or non-conforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten days thereafter, the Owner may upon ten additional days' written notice sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor, including compensation for the Architect's additional services made necessary thereby. If such proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

13.2.6 The Contractor shall bear the cost of making good all work of the Owner or separate contractors destroyed or damaged by such correction or removal.

13.2.7 Nothing contained in this Paragraph 13.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Paragraph 4.5 hereof. The establishment of the time period of one year after the Date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which his obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to his obligations other than specifically to correct the Work.

13.3 ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK

13.3.1 If the Owner prefers to accept defective or non-conforming Work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect a reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 14

TERMINATION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 If the Work is stopped for a period of thirty days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, or if the Work should be stopped for a period of thirty days by the Contractor because the Architect has not issued a Certificate for Payment as provided in Paragraph 9.7 or because the Owner has not made payment thereon as provided in Paragraph 9.7, then the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner payment for all Work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment and machinery, including reasonable profit and damages.

14.2 TERMINATION BY THE OWNER

14.2.1 If the Contractor is adjudged a bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency, or if he persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if he fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the Contract Documents, then the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may, without prejudice to any right or remedy and after giving the Contractor and his surety, if any, seven days' written notice, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished.

14.2.2 If the unpaid balance of the Contract Sum exceeds the costs of finishing the Work, including compensation for the Architect's additional services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or to the Owner, as the case may be, shall be certified by the Architect, upon application, in the manner provided in Paragraph 9.4, and this obligation for payment shall survive the termination of the Contract.

8/76 200M
RPC 12/76 200M

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A101

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a

STIPULATED SUM

1977 EDITION

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION

Use only with the 1976 Edition of AIA Document A201, General Conditions of the Contract for Construction.

This document has been approved and endorsed by The Associated General Contractors of America.

AGREEMENT

made as of the 5th day of June in the year of Nineteen Hundred and Seventy-Nine

BETWEEN the Owner: THE MAYOR AND COUNCIL OF THE CITY OF ATHENS, GEORGIA

and the Contractor: MEEHAN ELECTRIC CO., INC.

The Project: Electrical and Mechanical Improvements for the J. G. Beacham Filtration Plant

The Architect: Newcomb and Boyd, Consulting Engineers

The Owner and the Contractor agree as set forth below.

Copyright 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, © 1977 by the American Institute of Architects, 1735 New York Avenue, N.W., Washington, D. C. 20006. Reproduction of the material herein or substantial quotation of its provisions without permission of the AIA violates the copyright laws of the United States and will be subject to legal prosecution.

ARTICLE 1

THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, all Addenda issued prior to and all Modifications issued after execution of this Agreement. These form the Contract, and all are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the Contract Documents appears in Article 7.

ARTICLE 2

THE WORK

The Contractor shall perform all the Work required by the Contract Documents for adding a 2400 volt switchyard adjacent to power company substation; Modifications to existing 2400 volt overhead distribution system; Renovation of wiring systems in several buildings including 2400 and 600 volt motor controls.

(Here insert the caption descriptive of the Work as used on other Contract Documents.)

ARTICLE 3

TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

The Work to be performed under this Contract shall be commenced on or before July 15, 1979, subject to written notice to proceed by owner.

and, subject to authorized adjustments, Substantial Completion shall be achieved not later than three hundred fifty (350) consecutive calendar days from and including said date.

(Here insert any special provisions for liquidated damages relating to failure to complete on time.)

ARTICLE 4

CONTRACT SUM

The Owner shall pay the Contractor in current funds for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the Contract Sum of Three Hundred Ninety-Eight Thousand Five Hundred and Thirty-Five Dollars ($398,535.00).

The Contract Sum is determined as follows: See pages 1C-1, 1C-2, and 1C-3 of contract specifications.
(State here the base bid or other lump sum amount, accepted alternates, and unit prices, as applicable.)

ARTICLE 5

PROGRESS PAYMENTS

Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in the Contract Documents for the period ending the 30th or last day of the month as follows:

Not later than fifteen days following the end of the period covered by the Application for Payment One hundred percent (100%) of the portion of the Contract Sum properly allocable to labor, materials and equipment incorporated in the Work and One hundred percent (100 %) of the portion of the Contract Sum properly allocable to materials and equipment suitably stored at the site or at some other location agreed upon in writing, for the period covered by the Application for Payment, less the aggregate of previous payments made by the Owner; and upon Substantial Completion of the entire Work, a sum sufficient to increase the total payments to Ninety percent (90%) of the Contract Sum, less such amounts as the Architect shall determine for all incomplete Work and unsettled claims as provided in the Contract Documents.

(If not covered elsewhere in the Contract Documents, here insert any provision for limiting or reducing the amount retained after the Work reaches a certain stage of completion.)

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate entered below, or in the absence thereof, at the legal rate prevailing at the place of the Project.
(Here insert any rate of interest agreed upon.)

(Usury laws and requirements under the Federal Truth in Lending Act, similar state and local consumer credit laws and other regulations at the Owner's and Contractor's principal places of business, the location of the Project and elsewhere may affect the validity of this provision. Specific legal advice should be obtained with respect to deletion, modification, or other requirements such as written disclosures or waivers.)

ARTICLE 6

FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Contract Sum, shall be paid by the Owner to the Contractor when the Work has been completed, the Contract fully performed, and a final Certificate for Payment has been issued by the Architect.

ARTICLE 7

MISCELLANEOUS PROVISIONS

7.1 Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

7.2 The Contract Documents, which constitute the entire agreement between the Owner and the Contractor, are listed in Article 1 and, except for Modifications issued after execution of this Agreement, are enumerated as follows:

(List below the Agreement, the Conditions of the Contract (General, Supplementary, and other Conditions), the Drawings, the Specifications, and any Addenda and accepted alternates, showing page or sheet numbers in all cases and dates where applicable.)

General requirements; Proposal; Bid bond; General conditions; Supplementary general conditions; Performance bond; Payment bond; Schedule of values; and specifications contained in the contract documents and construction specifications and drawings by Newcomb and Boyd, Comm. No. 78N00Z-January 1979 for Electrical and Mechanical Improvements J. G. Beacham Water Filtration Plant.

This Agreement entered into as of the day and year first written above.

OWNER	CONTRACTOR
City of Athens	MEEHAN ELECTRIC CO., INC.
W. C. Britt Jr.	P.O. Box 409 Athens, Ga.
	J. Clayton Meehan Jr. V.P.
	Minnie A. Meehan Secretary

Certificate of Insurance

acord

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

NAME AND ADDRESS OF AGENCY

Smith-Boley-Brown, Inc.
P. O. Box 1908
Athens, Georgia 30603

NAME AND ADDRESS OF INSURED

Meehan Electric Co., Inc.
P. O. Box 409
Athens, Georgia 30603

COMPANIES AFFORDING COVERAGES

COMPANY LETTER A — Gulf Insurance Company

COMPANY LETTER B — South Carolina Insurance Company

COMPANY LETTER C

COMPANY LETTER D

COMPANY LETTER E

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time.

COMPANY LETTER	TYPE OF INSURANCE	POLICY NUMBER	POLICY EXPIRATION DATE	Limits of Liability in Thousands (000)		
					EACH OCCURRENCE	AGGREGATE
A	**GENERAL LIABILITY** X COMPREHENSIVE FORM X PREMISES—OPERATIONS X EXPLOSION AND COLLAPSE HAZARD X UNDERGROUND HAZARD X PRODUCTS/COMPLETED OPERATIONS HAZARD X CONTRACTUAL INSURANCE X BROAD FORM PROPERTY DAMAGE X INDEPENDENT CONTRACTORS X PERSONAL INJURY	CCP9108270	1-27-81	BODILY INJURY PROPERTY DAMAGE	$	$
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$ 300,	$ 300,
				PERSONAL INJURY		$ 300,
A	**AUTOMOBILE LIABILITY** X COMPREHENSIVE FORM X OWNED X HIRED X NON-OWNED	BA5970641	1-27-80	BODILY INJURY (EACH PERSON) BODILY INJURY (EACH OCCURRENCE)	$ 300, $ 500,	
				PROPERTY DAMAGE	$ 100	
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	
B	**EXCESS LIABILITY** X UMBRELLA FORM OTHER THAN UMBRELLA FORM	SCU1092	2-14-80	BODILY INJURY AND PROPERTY DAMAGE COMBINED	$1,000,	$1,000,
A	**WORKERS' COMPENSATION and EMPLOYERS' LIABILITY**	WC5904471	1-27-80	STATUTORY		
					$100,	INCLUDED
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

Renovations and additions to Beacham Filter Plant,
Athens, Georgia.

Cancellation: Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail * days written notice to the below named certificate holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the company.

*See Attached Endorsement

NAME AND ADDRESS OF CERTIFICATE HOLDER

City of Athens
City Hall
Athens, Georgia 30601

DATE ISSUED 6/5/81

SMITH-BOLEY-BROWN, INC.

William G. Aiken

AUTHORIZED REPRESENTATIVE

SMITH-BOLEY-BROWN, INC.

ACORD 25 (Ed. 2-77)

INSURANCE BINDER

acord

THIS BINDER IS A TEMPORARY INSURANCE CONTRACT, SUBJECT TO THE CONDITIONS SHOWN ON THE REVERSE SIDE OF THIS FORM.

Binder No.

NAME AND ADDRESS OF AGENCY

Smith-Boley-Brown, Inc.
P. O. Box 1908
Athens, Georgia 30603

COMPANY Gulf Insurance Company

Effective 12:01 Am June 5, 19 79
Expires 12:01 am When Policy is Issued, 19

☐ This binder is issued to extend coverage in the above named company per expiring policy # (except as noted below)

NAME AND MAILING ADDRESS OF INSURED

Meehan Electric Company, Inc.
P. O. Box 409
Athens, Georgia 30603

Description of Operation/Vehicles/Property

Owners & Contractors Protective Liability

PROPERTY

Type and Location of Property	Coverage/Perils/Forms	Amt of Insurance	Ded.	Coins. %

LIABILITY

Type of Insurance	Coverage/Forms	Limits of Liability	Each Occurrence	Aggregate
☐ Scheduled Form ☐ Comprehensive Form ☐ Premises/Operations ☐ Products/Completed Operations ☐ Contractual ☒ Other (specify below) ☐ Med. Pay. $ Per Person $ Per Accident ☐ Personal Injury	OCP ☐ A ☐ B ☐ C	Bodily Injury	$300,000.	$ 300,000
		Property Damage	$300,000.	$ 300,000
		Bodily Injury & Property Damage Combined	$	$
		Personal Injury		$

AUTOMOBILE

		Limits of Liability	
☐ Liability ☐ Non-owned ☐ Hired		Bodily Injury (Each Person)	$
☐ Comprehensive-Deductible	$	Bodily Injury (Each Occurrence)	$
☐ Collision-Deductible	$	Property Damage	$
☐ Medical Payments	$	Bodily Injury & Property Damage Combined	$
☐ Uninsured Motorist	$		
☐ No Fault (specify):			
☐ Other (specify):			

☐ WORKERS' COMPENSATION — Statutory Limits (specify states below) ☐ EMPLOYERS' LIABILITY — Limit $

SPECIAL CONDITIONS/OTHER COVERAGES

NAME AND ADDRESS OF ☐ MORTGAGEE ☐ LOSS PAYEE ☐ ADD'L INSURED

LOAN NUMBER

6/1/79

Signature of Authorized Representative — Date

ACORD 75 (6-77)

CONDITIONS

This Company binds the kind(s) of insurance stipulated on the reverse side. This insurance is subject to the terms, conditions and limitations of the policy(ies) in current use by the Company.

This binder may be cancelled by the Insured by surrender of this binder or by written notice to the Company stating when cancellation will be effective. This binder may be cancelled by the Company by notice to the Insured in accordance with the policy conditions. This binder is cancelled when replaced by a policy. If this binder is not replaced by a policy, the Company is entitled to charge a premium for the binder according to the Rules and Rates in use by the Company.

GU 6631

ENDORSEMENT

This endorsement, effective 6-5-79 (12:01 A. M., standard time), forms a part of policy No. WC5904471

issued to Meehan Electric Company, Inc.

by Gulf Insurance Company

FOR PROJECT: RENOVATIONS AND ADDITIONS TO BEACHAM FILTER PLANT, ATHENS, GEORGIA.

In consideration of the premium for which the policy is written and proper rate adjustment when applicable, the insurance company agrees as follows:

The insurance company agrees that this policy shall not be cancelled, changed, allowed to lapse, or allowed to expire until ten days after the Owner has received written notice thereof as evidenced by return receipt of registered letter or until such time as other valid and effective insurance coverage acceptable in every respect to the Owner and providing protection equal to protection called for in the policy shown below shall have been received, accepted, and acknowledged by the Owner.

The foregoing insurance provisions have been incorporated into by reference and are hereby made a part of insurance: Policy No. WC5904471, this 5th day of June, 1979.

All other terms and conditions of this policy remain unchanged

SMITH-BOLEY-BROWN, INC.

William G Aiken

Authorized Representative

SMITH-BOLEY-BROWN, INC.

GU 6631

ENDORSEMENT

This endorsement, effective 6-5-79 (12:01 A. M., standard time), forms a part of policy No. BA5970641

issued to Meehan Electric Company, Inc.

by Gulf Insurance Company

FOR PROJECT: RENOVATIONS AND ADDITIONS TO BEACHAM FILTER PLANT, ATHENS, GEORGIA.

In consideration of the premium for which the policy is written and proper rate adjustment when applicable, the insurance company agrees as follows:

The insurance company agrees that this policy shall not be cancelled, changed, allowed to lapse, or allowed to expire until ten days after the Onwer has received written notice thereof as evidenced by return receipt of registered letter or until such time as other valid and effective insurance coverage acceptable in every respect to the Owner and providing protection equal to protection called for in the policy shown below shall have been received, accepted, and acknowledged by the Owner.

The foregoing insurance provisions have been incorporated into by reference and are hereby made a part of insurance: Policy BA5970641, this 5th day of June, 1979.

All other terms and conditions of this policy remain unchanged.

SMITH-BOLEY-BROWN, INC.

William G Aiken

Authorized Representative

SMITH-BOLEY-BROWN, INC.

GU 6631

ENDORSEMENT

This endorsement, effective 6-5-79 (12:01 A. M., standard time), forms a part of policy No. CCP9108270

issued to Meehan Electric Company, Inc.

by Gulf Insurance Company

FOR PROJECT: RENOVATIONS AND ADDITIONS TO BEACHAM FILTER PLANT, ATHENS, GEORGIA.

In consideration of the premium for which the policy is written and proper rate adjustment when applicable, the insurance company agrees as follows:

> The insurance company agrees that this policy shall not be cancelled, changed, allowed to lapse, or allowed to expire until ten (10) days after the Owner has received written notice thereof as evidenced by return receipt of registered letter or until such time as other valid and effective insurance coverage acceptable in every respect to the Owner and providing protection equal to protection called for in the policy shown below shall have been received, accepted, and acknowledged by the Owner.

The foregoing insurance provisions have been incorporated into by reference and are hereby made a part of insurance: Policy No. CCP9108270, this 5th day of June, 1979.

All other terms and conditions of this policy remain unchanged.

SMITH-BOLEY-BROWN, INC.

William G. Aiken

Authorized Representative

SMITH-BOLEY-BROWN, INC.

PERFORMANCE BOND

CLARKE COUNTY)
) ss:
STATE OF GEORGIA)

KNOW ALL MEN BY THESE PRESENTS, that we Meehan Electric Co., Inc. Athens, Georgia, hereinafter known as the "Contractor," as principal, and United States Fidelity & Guaranty Company, as surety, are held and firmly bound unto The Mayor and Council of the City of Athens, Georgia, hereinafter known as the "Owner," in the penal sum of Three Hundred Ninety Eight Thousand, Five Hundred Thirty Five and 0/100 Dollars ($ 398,535.00) lawful money of the United States of America, to be paid to the Owner, for the use and benefit of said obligee, and of all persons doing work or furnishing skill, tools, machinery, or materials under or for the purposes of the contract hereinafter named, for which payment, well and truly to be made, we bind ourselves, our successors, and our several respective heirs, assigns, executors, and administrators, jointly and severally, firmly by these presents.

SEALED WITH OUR SEALS AND DATED THIS THE 17th DAY OF May, 1979.

WHEREAS, the above bounden Meehan Electric Co., Inc., by an instrument in writing, bearing even date, with these presents, has contracted with the Owner to furnish all equipment, tools, materials, skill and labor Electrical Services (Rework) for Water Filtration Plant, Athens, Georgia

All work to be performed in strict accordance with the attached Agreement or Contract and Specifications, which Contract is by reference made a part hereof:

NOW, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Meehan Electric Co., Inc. shall complete the work provided for in said Contract according to terms, and shall save the obligee hereunder free from all costs and charges that may accrue on account of the doing of the work specified in the Contract, and shall comply with the laws appertaining to said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

AND THE FURTHER CONDITION OF THIS OBLIGATION IS SUCH THAT IF

Meehan Electric Co., Inc., as Contractor, shall fully and faithfully perform the work in accordance with the terms of the annexed contract therefor and the plans and specifications therein referred to, and provide the materials therein called for, and replace defective work or materials for a period of one year after the completion of this contract, then this obligation shall be null and void; otherwise they, Meehan Electric Co., Inc.

, as Contractor and

United States Fidelity & Guaranty Company, as Surety, jointly and severally agree to pay the Owner the difference between the sum to which the said Meehan Electric Co., Inc., as Contractor, would be entitled in the completion of the Contract, and that which the Owner may be obliged to pay for the completion of the work by Contract or otherwise, and agree to pay any damage, direct or indirect or consequential, which said Owner may sustain on account of such work or on account of the failure of said Contractor properly and in all things to keep and execute the provisions of the Contract.

And the said Meehan Electric Co., Inc.

as Contractor, and United States Fidelity & Guaranty Company as Surety, hereby further bind themselves, their successors, assigns, heirs, executors, and administrators, jointly and severally, that they will indemnify and save harmless and will pay all amounts, damages, costs, and judgments which may be recovered against, and all expenses incurred by, the Owner and all representatives of said Owner from or arising out of all or any suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work, or any such suit or claim arising from any other act, omission, negligence, or misconduct of the Contractor, his agents, representatives, servants, and employees in the performance of said work or of the repair or maintenance thereof, or the manner of doing the same, or the neglect of said Contractor, or agents or servants, or the improper performance of the said work by the Contractor or agents or servants, or the infringement of any patent rights by reason of the use of any equipment or materials furnished under the said Contract, and will also pay any damages for delay in performance within the time agreed, as stated in the Contract; further, failure so to do with such persons, firms, partnerships, or corporation shall give them a direct right of action against the principal and surety under this obligation.

As the said surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying the same, shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

Without limiting the effect of any other provisions herein contained, this Bond is to be construed as a statutory bond under the provisions of Section 23-1705 of the 1933 Code of Georgia as amended to date.

IN WITNESS WHEREOF, the said Meehan Electric Co., Inc.

has caused its corporate seal to be hereto affixed, and these presents to be signed in its name by _____

and the said United States Fidelity & Guaranty Company

as Surety, has caused its corporate seal to be hereto affixed and these presents to be signed in its name by Winnie L. Norris.

(As to Contractor)

Signed, sealed and delivered in the presence of:

_____

_____

*CONTRACTOR (SEAL)

Meehan Electric Co., Inc.

By: J. Clayton Meehan Jr. V.P.
(Name) (Title)

ATTEST:

Maurice G. Meehan
Secretary

(As to Surety)

Signed, sealed and delivered in the presence of:

_____

_____

SURETY (SEAL)

United States Fidelity & Guaranty Company

By: Winnie L. Norris
Attorney in Fact Winnie L. Norris

COUNTERSIGNED:

By: L. L. Scruggs
Resident Agent L. L. Scruggs
(Resident of Clarke County)

APPROVED AS TO FORM:

_____
City Attorney

*NOTE: If the Principal is a corporation, the bond shall be signed by the President or Vice President, attested by the Secretary and the corporate seal affixed. If the Principal is a partnership, the bond shall be signed in the partnership name by one of the partners, with indication that he is a general partner.

Bond Approved _____

PAYMENT BOND

CLARKE COUNTY)
) ss:
STATE OF GEORGIA)

KNOW ALL MEN BY THESE PRESENTS, that we Meehan Electric Co., Inc. Athens, Georgia, hereinafter known as the "Contractor," as principal, and United States Fidelity & Guaranty Company, as Surety, are held and firmly bound unto The Mayor and Council of the City of Athens, Georgia, hereinafter known as the "Owner," in the penal sum of Three Hundred Ninety Eight Thousand, Five Hundred Thirty Five and 0/100 Dollars ($ 398,535.00) lawful money of the United States of America to be paid to the Owner, for the use and benefit of the said obligee, and all persons doing work or furnishing skill, tools, machinery, or materials under or for the purpose of the contract hereinafter named, for which payment, well and truly to be made, we bind ourselves, our successors, and our several respective heirs, assigns, executors, and administrators, jointly and severally, firmly by these presents.

SEALED WITH OUR SEALS AND DATED THIS THE 17th DAY OF May, 1979.

WHEREAS, the above bounden Meehan Electric Co., Inc. by an instrument in writing, bearing even date, with these presents, has contracted with the Owner to furnish all equipment, tools, materials, skill, and labor Electrical Services (Rework) for Water Filtration Plant, Athens, Georgia.

All work to be performed in strict accordance with the attached Agreement or Contract and Specifications, which Contract is by reference made a part hereof:

NOW, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Meehan Electric Co., Inc. and all subcontractors to whom any portion of the work provided for in the

attached Agreement or Contract is sublet and all assignees of the said ____

Meehan Electric Co., Inc.

and of such subcontractors shall promptly make payments to all persons supplying him or them with labor, material, or supplies for or in the prosecution of the work provided for in such contract, or in any amendment or extension of or addition to said Contract, and for the payment of reasonable attorneys fees, incurred by the claimant or claimants in suits on said bond, then the above obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, however, that this bond is subject to the following conditions and limitations:

(a) Any person, firm or corporation that has furnished labor, materials, or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right of action against the Contractor and Surety on this bond, which right of action shall be asserted in a proceeding, instituted in the county in which the work provided for in said Contract is to be performed or in any county in which said Contractor or Surety does business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants for his or their use and benefit against said Contractor and Surety or either of them (but not later than one year after the final settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

(b) The Principal and Surety hereby designate and appoint the City Clerk of Athens, Georgia as the agent of each of them to receive and accept service of process or other pleading issued or filed in any proceeding instituted on this bond and hereby consent that such service shall be the same as personal service on the Contractor and/or Surety.

(c) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one year after the final settlement of said Contract.

(d) This bond is given pursuant to the terms of Section 23-1705 of the 1933 Code of Georgia as amended as all the provisions of law with reference to this character of bond as set forth in said section or as may hereinafter be enacted are hereby made a part hereof to the same extent as if set out herein in full.

IN WITNESS WHEREOF, the said Meehan Electric Co., Inc.
has caused its corporate seal to be hereto affixed and these presents
to be signed in its name by L. CLAYTON MEEHAN JR.

(As to Contractor)

Signed, sealed and delivered
in the presence of:

Meehan Electric Co., Inc. (SEAL)
*CONTRACTOR

By: L Clayton Meehan Jr. V.P.
(Name) (Title)

(As to Surety)

Signed and delivered in the
presence of:

ATTEST:
Secretary

SURETY:
United States Fidelity & Guaranty Company

Winnie L. Norris, Attorney-in-Fact

COUNTERSIGNED:

L. L. Scruggs, Clarke County Resident Agent

APPROVED AS TO FORM:

City Attorney

*NOTE: If the Principal is a corporation, the bond shall be signed by the President or a Vice-President, attested by the Secretary and the corporate seal affixed. If the Principal is a partnership, the bond shall be signed in the partnership name by one of the partners, with indication that he is a general partner.

Bond Approved _____

CERTIFIED COPY

GENERAL POWER OF ATTORNEY

No. 89191

Know all Men by these Presents:

That UNITED STATES FIDELITY AND GUARANTY COMPANY, a corporation organized and existing under the laws of the State of Maryland, and having its principal office at the City of Baltimore, in the State of Maryland, does hereby constitute and appoint Trenton Tunnell, Jr., Clarence M. Glenn, Winnie L. Norris, William E. Pitts, William L. Hix, Spencer S. Brewer, Charles B. Grisard, Travis G. Huffines, Robert L. Potts, Jr., Travis Oxford, John R. Baer, Leroy N. Myhre, Cindy F. Ricks, Judy D. Averett and Barry C. Sellars

of the City of Atlanta, State of Georgia,
its true and lawful ~~attorney x in and for the State x of~~ General Agents and/or Agents and Attorneys-in-fact

for the following purposes, to wit:

To sign its name as surety to, and to execute, seal and acknowledge any and all bonds, and to respectively do and perform any and all acts and things set forth in the resolution of the Board of Directors of the said UNITED STATES FIDELITY AND GUARANTY COMPANY, a certified copy of which is hereto annexed and made a part of this Power of Attorney; and the said UNITED STATES FIDELITY AND GUARANTY COMPANY, through us, its Board of Directors, hereby ratifies and confirms all and whatsoever ~~the said~~ anyone of the said Trenton Tunnell, Jr. and the said Clarence M. Glenn and the said Winnie L. Norris and the said William E. Pitts and the said William L. Hix and the said Spencer S. Brewer and the said Charles B. Grisard and the said Travis G. Huffines and the said Robert L. Potts, Jr. and the said Travis Oxford and the said John R. Baer and the said Leroy N. Myhre and the said Cindy F. Ricks and the said Judy D. Averett and the said Barry C. Sellars may lawfully do in the premises by virtue of these presents.

In Witness Whereof, the said UNITED STATES FIDELITY AND GUARANTY COMPANY has caused this instrument to be sealed with its corporate seal, duly attested by the signatures of its Vice-President and Assistant Secretary, this 15th day of December, A. D. 19 78

UNITED STATES FIDELITY AND GUARANTY COMPANY.

(Signed) By.... Charles W. Boone
Vice-President.

(SEAL)

(Signed) Ray H. Britt
Assistant Secretary.

STATE OF MARYLAND, }
BALTIMORE CITY, } ss:

On this 15th day of December, A. D. 1978, before me personally came Charles W. Boone, Vice-President of the UNITED STATES FIDELITY AND GUARANTY COMPANY and Ray H. Britt, Assistant Secretary of said Company, with both of whom I am personally acquainted, who being by me severally duly sworn, said that they, the said Charles W. Boone and Ray H. Britt were respectively the Vice-President and the Assistant Secretary of the said UNITED STATES FIDELITY AND GUARANTY COMPANY, the corporation described in and which executed the foregoing Power of Attorney; that they each knew the seal of said corporation; that the seal affixed to said Power of Attorney was such corporate seal, that it was so fixed by order of the Board of Directors of said corporation, and that they signed their names thereto by like order as Vice-President and Assistant Secretary, respectively, of the Company.

My commission expires the first day in July, A. D. 19 82

(SEAL) (Signed) Margaret M. Hurst
Notary Public.

STATE OF MARYLAND }
BALTIMORE CITY, } Sct.

I, William Allen, Clerk of the Superior Court of Baltimore City, which Court is a Court of Record, and has a seal, do hereby certify that Margaret M. Hurst, Esquire, before whom the annexed affidavits were made, and who has thereto subscribed his name, was at the time of so doing a Notary Public of the State of Maryland, in and for the City of Baltimore, duly commissioned and sworn and authorized by law to administer oaths and take acknowledgments, or proof of deeds to be recorded therein. I further certify that I am acquainted with the handwriting of the said Notary, and verily believe the signature to be his genuine signature.

In Testimony Whereof, I hereto set my hand and affix the seal of the Superior Court of Baltimore City, the same being a Court of Record, this 15th day of December, A. D. 19 78

(SEAL) (Signed) William Allen
Clerk of the Superior Court of Baltimore City.

FS 3 (6-77)

COPY OF RESOLUTION

That Whereas, it is necessary for the effectual transaction of business that this Company appoint agents and attorneys with power and authority to act for it and in its name in States other than Maryland, and in the Territories of the United States and in the Provinces of the Dominion of Canada and in the Colony of Newfoundland.

Therefore, be it Resolved, that this Company do, and it hereby does, authorize and empower its President or either of its Vice-Presidents in conjunction with its Secretary or one of its Assistant Secretaries, under its corporate seal, to appoint any person or persons as attorney or attorneys-in-fact, or agent or agents of said Company, in its name and as its act, to execute and deliver any and all contracts guaranteeing the fidelity of persons holding positions of public or private trust, guaranteeing the performances of contracts other than insurance policies and executing or guaranteeing bonds and undertakings, required or permitted in all actions or proceedings, or by law allowed, and

Also, in its name and as its attorney or attorneys-in-fact, or agent or agents to execute and guarantee the conditions of any and all bonds, recognizances, obligations, stipulations, undertakings or anything in the nature of either of the same, which are or may by law, municipal or otherwise, or by any Statute of the United States or of any State or Territory of the United States or of the Provinces of the Dominion of Canada or of the Colony of Newfoundland, or by the rules, regulations, orders, customs, practice or discretion of any board, body, organization, office or officer, local, municipal or otherwise, be allowed, required or permitted to be executed, made, taken, given, tendered, accepted, filed or recorded for the security or protection of, by or for any person or persons, corporation, body, office, interest, municipality or other association or organization whatsoever, in any and all capacities whatsoever, conditioned for the doing or not doing of anything or any conditions which may be provided for in any such bond, recognizance, obligation, stipulation, or undertaking, or anything in the nature of either of the same.

I, Charles O. Mullennix , an Assistant Secretary of the UNITED STATES FIDELITY AND GUARANTY COMPANY, do hereby certify that the foregoing is a full, true and correct copy of the original power of attorney given by said Company to Trenton Tunnell, Jr., Clarence M. Glenn, Winnie L. Norris, William E. Pitts, William L. Hix, Spencer S. Brewer, Charles B. Grisard, Travis G. Huffines, Robert L. Potts, Jr., Travis Oxford, John R. Baer, Leroy N. Myhre, Cindy F. Ricks, Judy D. Averett and Barry C. Sellars

of Atlanta, Georgia , authorizing and empowering them to sign bonds as therein set forth, which power of attorney has never been revoked and is still in full force and effect.

And I do further certify that said Power of Attorney was given in pursuance of a resolution adopted at a regular meeting of the Board of Directors of said Company, duly called and held at the office of the Company in the City of Baltimore, on the 11th day of July, 1910, at which meeting a quorum of the Board of Directors was present, and that the foregoing is a true and correct copy of said resolution, and the whole thereof as recorded in the minutes of said meeting.

In Testimony Whereof, I have hereunto set my hand and the seal of the UNITED STATES FIDELITY AND GUARANTY COMPANY on May 17, 1979
(Date)

Charles O. Mullennix

Assistant Secretary.

CITY OF ATHENS

Inter-Department Correspondence

Date September 29, 1980

To: Johnny Fowler

From: Ben Williams BW

SUBJECT: Contract with Meehan Electric Company

Attached is an executed copy of Change Order No. 6 for the electrical and mechanical improvements to the Water Filtration Plant. Please attach this to the original contract for the records.

Consulting Engineers
One Northside 75
Suite 200 Alpha Building
Atlanta, Georgia 30318
404 352-3930

Newcomb & Boyd

ELECTRICAL & MECHANICAL IMPROVEMENTS
J.G. BEACHAM FILTRATION PLANT, ATHENS, GA.
COMMISSION NO. 78N002
CHANGE ORDER NO. 6: SEPTEMBER 17, 1980

OWNER: CITY OF ATHENS, GEORGIA, CITY HALL, ATHENS, GA. 30601
ATTN: MR. BENTON WILLIAMS
CONTRACTOR: MEEHAN ELECTRIC CO., P.O. BOX 409, ATHENS, GA. 30603

To the Contractor: You are hereby authorized, subject to contract provisions, to make changes to high service pump starters nos. 6 & 7 and their associated controls. The changes shall be in accordance with marked up General Electric elementary diagram #221B7855 sheet no. 4, 8/24/79 transmitted to Meehan Electric Co. 8/7/80. This work shall not alter the equipment warrantee and shall be done under supervision of General Electric Co. personnel. Corrected shop drawings shall be included in this change order. Total Contract Addition: $1,480.00.

Original Contract Amount:	$398,535.00
Change Orders #1 thru 5	0.00
Change Order #6	1,480.00
	$400,015.00

Time extension: None

Submitted by: Thomas L. Tykes Date: 9-17-80

Approved for Owner by: [illegible] Date: 9/29/80

Accepted for Contractor by: [illegible] Date: 9-25-80

Attachments

MEEHAN
ELECTRIC COMPANY, INC
P.O. BOX 409 • 197 PARK AVENUE
ATHENS, GA 30603 • 404-548-7253

September 3, 1980

Newcomb & Boyd
One Northside 75
Suite 200 Alpha Building
Atlanta, Georgia 30318

Re: J.G. Beachman Filtration Plant
Athens, Georgia

Attn: Mr. Elmer L. Riker

Dear Mr. Riker:

As you know pumps 6 & 7 are still not fully operational. I have met with Mr. Posey from your office, Mr. Dan Honeycutt of General Electric and Mr. Carter with the City of Athens. I assume you have reviewed the drawings Mr. Posey prepared. Mr. Honeycutt has reviewed them for General Electric and I see no problems.

In order to accomplish the rewiring there will be some expense involved. I will have to install limit switches, rewire the solenoid valve and rework the R1 and R3 relays. G.E. requested that they have a representative present so that the warranty would not be violated. The cost for this work will be FOURTEEN HUNDRED EIGHTY AND NO/100 DOLLARS, ($1480.00). There will possibly be another charge when pumps 1, 2, 3, and 5 are reworked but there is no way of knowing this until we get into the actual work.

I trust you will find this explanation in order so we might expedite completion.

Yours truly,

MEEHAN ELECTRIC COMPANY, INC.

L. Clayton Meehan, Jr.

Consulting Engineers
One Northside 75
Suite 200 Alpha Building
Atlanta, Georgia 30318
404 352-3930

Memorandum

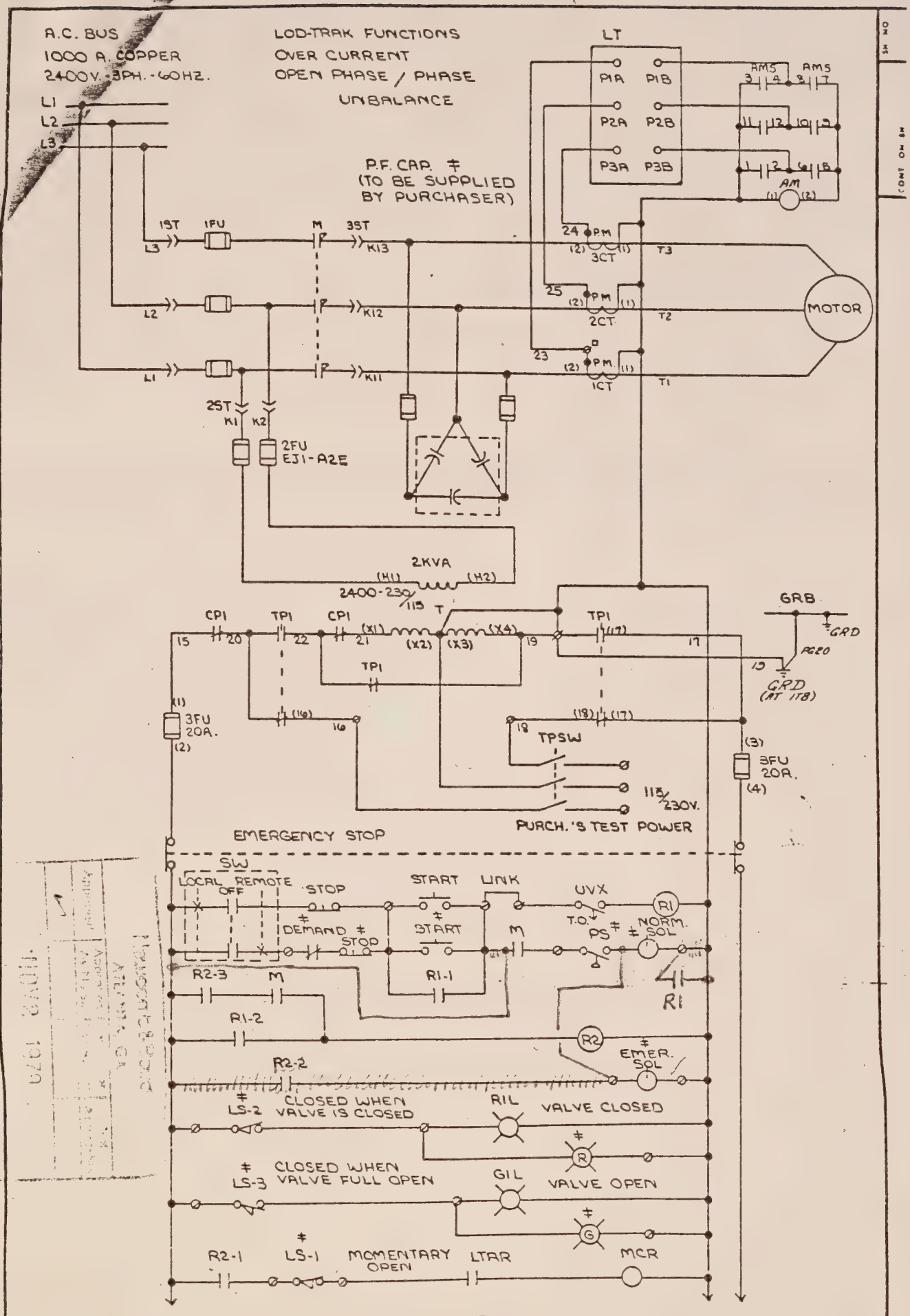
Newcomb & Boyd

To MEEHAN ELECTRIC CO., INC.
P.O. BOX 409
197 PARK AVENUE
ATHENS, GA. 30601

Project J.G. BEACHAM FILTRATION PLANT
Number 78 N002
Date 8/7/80
cc HARRY ELLIOTT
DAN HONEYCUTT

From PRISCY POSEY

THE ATTACHED DWGS. HAVE BEEN MARKED TO INDICATE THE NECESSARY CHANGES TO CONTROL CIRCUITS FOR H.S. PUMPS. #1, 2, 3, 5, 6, & 7.



R02-A01 B01

REV 3	REV 2	REV 1 Richa 10-11-79	APPROVAL	GENERAL ELECTRIC	ELEMENTARY DIAGRAM	083
REV 4	ISSUED	PRINTS TO	FIRST MADE FOR REQ 351-94096	GENERAL PURPOSE CONTROL MEBANE, NC USA	22187855	
REV 5	Richa 9-24-79		ML NO 2449X0244		CONT ON SH 4A	SH NO 4

From the desk of
BEN WILLIAMS 12/31/80

JOHNNY FOWLER,

PLEASE ADD THIS LIEN WAIVER TO YOUR OFFICAL CONTRACT FILE ON THE MEEHAN ELECTRIC CONTROL FOR MECHANICAL AND ELECTRICAL EMPROVEMENTS AT THE J. G. BEACHAM WATER FILTRATION PLANT.

BHW

A F F I D A V I T

STATE OF Georgia,

COUNTY OF Clarke,

L. Clayton Meehan, Jr., being duly sworn deposes and says on oath as follows:

, I am Vice-President of Meehan Electric Company, Inc. Contractor for the Electrical and Mechanical work on J.G. Beacham Water Filtration Plant under contract with the City of Athens which provides that the Owner may require evidence from the Contractor that payment has been made for all labor and material used in connection with said contractor before final payment is made.

I have knowledge of all labor and materials used in the work required under said contract, and am thoroughly familiar with the status of the accounts of such labor and materials and now state under oath that full payment has been made for all such labor and materials used through the date of Contractor estimate December 23, 1980 and that there are no outstanding liens of material, men or laborers.

I further certify that all items and amounts shown on the face of this estimate is correct, that all work has been performed, and materials supplied in full accordance with the terms of the contract documents and that the attached estimate is a true and correct statement of the contract account up to and including the last day of the period covered by this estimate.

I further state that the warranty period for all materials and work furnished under this contract shall be one year from the certification by Newcomb & Boyd of final completion of the work.

Maureen A. Meehan

Witness: Corporate Secretary

L. Clayton Meehan, Jr.

Affiant

Subscribed and sworn to before me

this 23 Day of December 19 80 A.D.

Shirley Bone

Notary Public

Notary Public, Ga. State at large;
My commission expires August 14, 1984.

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Maurice A. Meehan
Witness: Corporate Secretary

L. Clayton Meehan Jr.
Affiant

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this 23 Day of December 19 80 A.D.

Shirley Bone
Notary Public

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Maureen A. Meehan — L. Clayton Meehan

Witness: Corporate Secretary — Affiant

Subscribed and sworn to before me

this 23 Day of December 19 80 A.D.

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